



REGULAR PLANNING COMMISSION AGENDA

July 22, 2025 at 7:00 PM

Assembly Chambers/Zoom Webinar

<https://juneau.zoom.us/j/85421744892> or 1-253-215-8782 Webinar ID: 854 2174 4892

A. LAND ACKNOWLEDGEMENT

We would like to acknowledge that the City and Borough of Juneau is on Tlingit land and wish to honor the indigenous people of this land. For more than ten thousand years, Alaska Native people have been and continue to be integral to the well-being of our community. We are grateful to be in this place, a part of this community, and to honor the culture, traditions, and resilience of the Tlingit people. *Gunalchéesh!*

B. ROLL CALL

C. REQUEST FOR AGENDA CHANGES AND APPROVAL OF AGENDA

D. APPROVAL OF MINUTES

1. June 24, 2025, Draft Minutes Regular Planning Commission - **APPROVED**

E. BRIEF REVIEW OF THE RULES FOR PUBLIC PARTICIPATION

- F. **PUBLIC PARTICIPATION ON NON-AGENDA ITEMS** (Limited to no more than 20 minutes, with each speaker limited to a length of time set by the Mayor not to exceed three minutes.)

G. ITEMS FOR RECONSIDERATION

H. CONSENT AGENDA

1. **ARF2025 0001: Alternative Residential Subdivision Final Plan Approval for Brow Tine Subdivision. - APPROVED AS RECOMMENDED**

Applicant: R&S Construction LLC

Location: 4760 Glacier Hwy

DIRECTOR'S REPORT

The applicant requests Final Plan Approval for the Brow Tine Subdivision, an Alternative Residential Subdivision (ARS) creating 42 unit lots and one (1) parent lot, for a total of 43 lots.

STAFF RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE Alternative Residential Subdivision ARF2025 0001 with conditions.

2. **SMP2025 0001: Preliminary Plat Review for an Alternative Residential Subdivision to create 42 residential lots and a single parent lot in a D15 zone. - APPROVED AS RECOMMENDED**

Applicant: R&S Construction LLC

Location: 4760 Glacier Hwy

DIRECTOR'S REPORT

Applicant requests a Preliminary Plat Review for an Alternative Residential Subdivision creating 42 residential lots and a single parent lot in a D15 zone.

STAFF RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE the Preliminary Plat with conditions.

I. UNFINISHED BUSINESS

J. REGULAR AGENDA

1. **CSP2025 0001: Conversion to a Continuous Green T (CGT) Intersection at Egan Drive and Vanderbilt Hill Road.- APPROVED AS RECOMMENDED**

Applicant: State of Alaska DOT & PF

Location: Egan Drive and Vanderbilt Hill Road Intersection

DIRECTOR'S REPORT

The applicant requests State Project Review for ADOT&PF's intersection modification at Egan Drive and Vanderbilt Hill Road. The applicant is requesting approval to perform construction and signalization changes within the existing right-of-way to convert the intersection to a Continuous Green T-style Intersection, where southbound Egan traffic will continue without stopping at a signal, and left-turning traffic from Vanderbilt Hill Road will merge with southbound Egan traffic using a channelized merge lane.

STAFF RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE CSP2025 0001.

2. **FZE2025 0001: Flood Zone Exception to allow an encroachment and development of the HESCO Barrier, Phase 1 project. - APPROVED AS RECOMMENDED**

Applicant: CBJ Engineering

Location: 9399 Rivercourt Way to 4395 Riverside Drive

DIRECTOR'S REPORT

The applicant requests a Flood Zone Exception to allow an encroachment and development of the HESCO Barrier, Phase 1 project. The applicant is requesting an exception from standards specified in CBJ 49.70, Article IV – Flood Hazard Areas for the HESCO Barrier,

Phase 1 project, completed May 10, 2025.

STAFF RECOMMENDATION

The Director recommends that the Planning Commission review and consider the request for an exception from the provisions of CBJ 49.70, Article IV – Flood Hazard Areas. If the exception is granted, the applicant shall submit an appropriate Letter of Map Change [44 CFR 72.2] request to FEMA within six months of project completion, noted as May 10, 2025 [44 CFR 65.3].

3. **AME2019 0015: The proposed Text Amendment would update the City and Borough of Juneau's Comprehensive Plan by adding the Downtown Douglas / West Juneau Area Plan as an attachment. - TO BE CONTINUED AT AUGUST 12, 2025, PLANNING COMMISSION MEETING**

Applicant: City and Borough of Juneau

Location: N/A

DIRECTOR'S REPORT

The draft Downtown Douglas / West Juneau Area Plan (the Plan) is a 20-year vision for development and growth in the area from the Juneau-Douglas Bridge to Sandy Beach. The Plan includes five main elements to set forth the goals and actions that support its vision of a community that is: connected, prosperous, healthy and active, cultural and artistic, and sustainable and green.

STAFF RECOMMENDATION

Staff recommends that the Planning Commission APPROVE the Downtown Douglas / West Juneau Area Plan as an addition to the CBJ Comprehensive Plan and forward their Notice of Recommendation to the City Assembly.

K. OTHER BUSINESS

L. STAFF REPORTS

M. COMMITTEE REPORTS

N. LIAISON REPORT

O. CONTINUATION OF PUBLIC PARTICIPATION ON NON-AGENDA ITEMS

P. PLANNING COMMISSION COMMENTS AND QUESTIONS

Q. EXECUTIVE SESSION

R. SUPPLEMENTAL MATERIALS

1. Additional Materials

S. ADJOURNMENT

ADA accommodations available upon request: Please contact the Clerk's office 36 hours prior to any meeting so arrangements can be made for closed captioning or sign language interpreter services depending on the meeting format. The Clerk's office telephone number is 586-5278, e-mail: city.clerk@juneau.gov.

DRAFT MINUTES

Agenda

Planning Commission

Regular Meeting

CITY AND BOROUGH OF JUNEAU

Mandy Cole, Chair

June 24, 2025

I. LAND ACKNOWLEDGEMENT – Read by Ms. Derr

We would like to acknowledge that the City and Borough of Juneau is on Tlingit land, and wish to honor the indigenous people of this land. For more than ten thousand years, Alaska Native people have been and continue to be integral to the well-being of our community. We are grateful to be in this place, a part of this community, and to honor the culture, traditions, and resilience of the Tlingit people. Gunalchéesh!

Attorney Layne swore in the new member of the Planning Commission, Larry Gamez.

II. ROLL CALL

Mandy Cole, Chair, called the Regular Meeting of the City and Borough of Juneau (CBJ) Planning Commission (PC), held in Assembly Chambers of the Municipal Building, virtually via Zoom Webinar, and telephonically, to order at 7 p.m.

Commissioners present: Commissioners present in Chambers – Mandy Cole, Chair; Erik Pedersen, Vice Chair; Nina Keller; David Epstein, Jessalynn Rintala, Lacey Derr, Douglas Salik; Larry Gamez

Staff present: Jill Lawhorne, CDD Director; Sherri Layne, Attorney III; Brandon Robinson, Planner II; Jolene Murphy, Planner I;

Assembly members: Christine Woll

III. REQUEST FOR AGENDA CHANGES AND APPROVAL OF AGENDA

IV. APPROVAL OF MINUTES

- A.** April 22, 2025, Draft Minutes, Regular Planning Commission
- B.** May 13, 2025, Draft Minutes, Regular Planning Commission

MOTION: *by Mr. Epstein to approve the April 22, 2025, Planning Commission Regular Meeting minutes and the May 13, 2025, Regular Meeting minutes.*

V. BRIEF REVIEW OF THE RULES FOR PUBLIC PARTICIPATION

VI. PUBLIC PARTICIPATION ON NON-AGENDA ITEMS

VII. ITEMS FOR RECONSIDERATION

VIII. CONSENT AGENDA

USE2025 0009: Conditional Use Permit to construct new camp facilities at Echo Ranch Bible Camp.

Applicant: Gospel Missionary Union Inc.

Location: 40001 Glacier Hwy

Director's Report

The applicant requests a Conditional Use Permit to construct new staff cabins, camper cabins and associated camp facilities at Echo Ranch. Since 1981, a series of building and land use permits have been issued for expansion of the 155-acre site. Resorts and campgrounds are allowed, with Planning Commission approval, in the Rural Reserve zoning district. To streamline permitting, the applicant requests that camp facilities be preemptively approved under USE2025 0009.

Staff Recommendation

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE Conditional Use Permit USE2025 0009.

MOTION: *by Ms. Derr to accept staff's findings, analysis, and recommendations, and approve USE2025 0009.*

IX. UNFINISHED BUSINESS

X. REGULAR AGENDA

ARP2025 0001: Alternative Residential Subdivision Preliminary Plan to Subdivide 3.69 acres into 11 unit-lots and one parent lot on an unaddressed property in the vicinity of 10655 Glacier Highway near Wilma Avenue in a D-10 zoning district.

Applicant: Homeshore Engineering

Location: 10665 Glacier Hwy

Director's Report

The applicant requests approval for an Alternative Residential Subdivision Preliminary Plan to subdivide 3.69 acres into eleven (11) unit-lots and one (1) parent lot in a D-10 zoning district. The preliminary plan provides for a lot consolidation, a privately maintained access road, and eleven rough-graded unit-lots to be later developed into single-family homes similar in nature to those immediately surrounding the property.

Staff Recommendation

Staff recommends the Planning Commission adopt the Director's analysis and findings and APPROVE the Alternative Residential Subdivision with conditions.

Ms. Derr asked Director Lawhorne if there had been any movement on the under-permitted that was mentioned in their materials.

Director Lawhorne responded that she was not aware of any progress on that, but they may be in that permit process concurrently with this one. She noted that the Commission did not have authority over the DOT's permits, but they would need the DOT permit before building.

Mr. Pedersen asked for a brief summary of the differences between an ARS subdivision compared to a conventional subdivision. He noted it is his understanding that this process was the first where they are approving the plan and not a preliminary plot.

Director Lawhorne explained that with a traditional subdivision, the developer would install a city street to full city standard that is quite costly and does not allow much flexibility, but the alternative residential subdivision provides the opportunity to not provide a private street that requires maintenance and HOA agreements so the unit lot owners and HOA would care for the street and infrastructure, which allows the development to be more cost-effective and the lots to be smaller than the standard size requirement in that zoning district.

Mr. Pedersen asked if there were other distinctions for calling it a unit lot instead of a lot.

Director Lawhorne answered that they can or do not have meet the minimum lot size, but if they do meet the minimum lot size for the zoning district, they could have an ADU. She said another use that can be allowed in an ARS, but not applicable to this project, is childcare. She stated that when ARS has a private street, it acts more like a condominium association in a way.

Chair Cole reminded Director Lawhorne about the second part of Mr. Pedersen's question on the preliminary plan and final plan aspect.

Director Lawhorne responded that there is an alternative residential preliminary plat and final plat. The preliminary plat is just the subdivision on paper by creating the parent lot and unit lot, and the plan is where the Commission says they have more leeway in the ARS. She noted that in this instance, they are not going for bonuses and other options allowed in an ARS, which is where the plan really comes into play. She added that the plan really is more of the concept of the site, but the development, engineering, surveying, and time is costly, so the intent of tonight is to give

the applicant clear direction on what they are going to approve and any changes that need to be made or addressed.

Chair Cole voiced that it is worthwhile to talk about the number of unit lots in the preliminary versus final plan since this lot is eligible for additional lots. She asked there could be any changes in the unit lot number between the preliminary and final.

Director Lawhorne confirmed that is correct that they would have to likely repost, re-notice, and start over, so the intent should be discussed tonight and made clear.

Chair Cole added that there could be differences in configuration if buffers and setbacks were still met from the parent lot, but no differences in the number of unit lots at that point.

Director Lawhorne agreed, and added that if the Commission wanted to see an increased number of units, she suggested discussing that tonight and work through that process.

Mr. Epstein inquired if accessory dwelling units are out of the question for this development.

Chair Cole answered that it is based on the minimum lot size, so they need to ask the applicant what the minimum lot sizes are. She added if they meet the 6,000 square foot threshold for D10, they could be eligible for ADUs.

Director Lawhorne agreed with that.

Toby Lockhart, with Homeshore Engineering, read over what it states in the code about ARS. He said the minimum lot size for D10 is 6,000, and in the preliminary plan it shows that all but one meet that, and the owner is not adverse to doing ADUs for some of them. He shared that they have 11 unit lots and a common lot 12, which includes the access road and cul-de-sac to allow a fire apparatus to get through and additional open space that will handle drainage ditches, water and sewer. He noted there may be some minor configuration changes to the unit lots, but there is no desire to increase the number of unit lots after tonight.

Director Lawhorne asked if the applicant wanted to pursue reconfiguring or shifting the lot line so each lot met the minimum lot size of 6,000 to where they could have an ADU on each of them.

John Armstrong, owner of Cutting Edge Development, did not think they would be opposed to moving some lot lines around to get the last lot where it also meets the 6,000 square foot.

Chair Cole asked if there were any plans sidewalks or publicly accessible walkways.

Mr. Lockhart answered that a sidewalk is not included in the current plan and they believe that with a dead-end cul-de-sac, they will not have high speeds or volumes, and the estimated ADT is under 100. In his professional judgement, he did not feel it was warranted here. He noted that they have obtained a driveway permit for several dwellings, more than the current plan reflects.

Chair Cole stated they had a note in the additional materials from DOT that said a new driveway access permit for the development due to change of use, and the driveway was considered unpermitted as they had no record of it, so it sounds like that needs to be worked out with DOT.

Mr. Lockhart expressed that he was not aware of that, but will follow up.

Chair Cole said it appears that there is a substantial piece of land and asked if it was green space.

Mr. Lockhart answered yes.

Mr. Epstein noted that each unit has two parking spaces. He inquired if people would be parking in the street or parking on their lot with the narrow approach road of 20 foot.

Mr. Lockhart responded that they put in a driveway for each of the units on a concept level in the plan, with enough room to get two passenger vehicles off of the common access and parked in front of the house.

Ms. Derr asked if he still felt sidewalks are not needed with the potential of having an ADU on each of the lots, which would double the amount of potential vehicles moving through the area.

Mr. Lockhart answered he still felt they were not needed.

Chair Cole asked about the vegetation that would separate the houses to the south and those on Wilma Ave.

Mr. Lockhart answered that the plan shows a 20 foot buffer to the west, which leaves enough room for trees and undergrowth, but he reserved judgement until they do the final grading plan at the preliminary plat phase, as they may need some of that room for the back slopes and ditches. He said they would be stabilizing the slopes and likely hydroseeding at a minimum where needed, but they will leave trees where they can.

Chair Cole asked if there would be anything visually between the 5 foot buffer space like fencing or vegetation.

Mr. Lockhart answered they do not plan to put up a fence.

Chair Cole opened public testimony.

John Hyde voiced that his major concern was the setback between the properties on Wilma and this development, that they do not destroy any timber or removal of the bedrock that could create problems for the people that live there. He was also concerned with public safety, as another development had been proposed right below Wilma towards town that could contain over 50 to 60 vehicles. He said that people drive right over the trail where people bike and walk with no guardrail when they turn left coming out of Wilma, and when coming out of the road to town, they often will pass into the oncoming lane to get around you because no one wants to wait, as Glacier Rd is the most used road in the Juneau borough. He said these properties will add more unsafe driving conditions there. He expressed that it is also on top of a hill with no visibility one way or the other, and when berms of snow are there, you cannot even see what is coming 100 feet away. He mentioned that federal regulations says there needs to be 500 feet to stop in winter weather, and DOT stated on their website that their objective is to reduce or eliminate all traffic accidents in Alaska, but this will cause more accidents. He noted that deer and bear also

cross the road there all the time. He added that for this to be developed, they need to address all these issues and create improvements to make the area safe.

John Thudinga (ph), Wilma resident, voiced safety concerns. He said they live downstream from the proposed subdivision with ditches all around their houses, and they have water issues in the fall and winter. He was concerned how the drainage would work with this development, as they cannot handle any more water draining that way. The other concern he had was making left and rights turns, as visibility from Wilma is awful, mainly from Auke Bay over the crest. He voiced that having another access towards the crest will create more safety hazards with traffic.

Chair Cole asked the applicant to come back up and address comments and/or add testimony.

Mr. Lockhart expressed that the driveway permit was in place before he came on board, so he was not very familiar with it; however, the weather requirements with any driveway permit is to look at site distance and site triangles that takes into account vertical and horizontal geometry of the highway. He said that in this case, horizontally is a pretty straight shot with good site distances north and south. He stated that it is on top of a vertical curve, but he assumed they looked at that when the driveway permit was obtained. He shared that they have substantially completed the drainage study and report that will be included that the preliminary check list phase. He said since they are on top of the vertical curve, they have chosen to split the water, as there are nice big ditches along Glacier Highway, and they evaluated it for a quarter of a mile downstream and have no concerns. He believed having a 20 foot wide access and ditches on either side will help remove water from the site.

Chair Cole asked if they considered the green space on lot 12 as an access point since there is Glacier Highway access there.

Mr. Lockhart responded that as a rule, DOT likes to limited access points and did not want to add another one. He also believed there was an issue with getting that one permitted, so they opted to use it for open space and drainage.

Chair Cole asked Director Lawhorne about the cumulative driveway effect, as the residents of Wilma were correct that they just heard a subdivision permit for just south of them with the same concerns. She asked if DOT takes into account how many they are doing on that portion of land when they grant permits for driveway access like this.

Director Lawhorne expressed she did not know the answer, but they do like to use the existing permitted driveways that are already there. She said DOT is aware of the other development as well, so she imagined that they are looking at the highway itself and what they have permitted.

Mr. Epstein stated the measure of merit is trip generation in the peak hour, and if that exceeds 100, the applicant has to undertake a traffic impact analysis study and implement any mitigations needed, but he did not know if this development would generate 100 trips in a peak hour.

Mr. Gamez asked if there would be streetlights, as in the wintertime they have a lot of darkness, and he was thinking of the kids that would be living in those 11 or 12 units someday.

Director Lawhorne answered that they can put that in for the applicant to work through.

Ms. Derr asked if 5 foot buffers are common for this type of alternative residential subdivision or if the Commission could request a larger buffer between residential units to give some space.

Director Lawhorne responded that the minimum setbacks required for the parent lot are those of the underlying zoning district, which is D10, and that is their minimum requirement. She said the Commission can increase it, but noted that Wilma has the same applicable setbacks.

Chair Cole asked for clarification that in another development they spent time on vegetation cover in the buffer zone to create visual separation.

Director Lawhorne answered that is correct, and it also went for bonuses, which was another reason the Commission cared for more amenities and additives on that site. She stated that it is helpful to take into each site's surroundings, as in Ridgeview, they were mostly concerned with the lights being in the backyards. She added that in this instance, they are coming down the road and going away from Wilma. She noted that there are no setback requirements on the unit lots and the parameter buffer is required in lieu of the setback requirements, and the presumptive buffer width shall not be less than the setback of the underlying zoning district and the Commission can enlarge all or a portion of a buffer up to 25 feet in total width and can reduce buffer or portion by 75% of the setback for the underlying zoning district.

Ms. Keller shared that it looks like unit lots 11 and 10 will be close and unit lot 10 is quite far away from its boundary, but lot 11 is really close. She asked what the distance would be from the existing homes and unit lot 11.

Chair Cole asked for clarification that it would be a 10 foot separation between structures.

Director Lawhorne confirmed that sounded correct, and added that the contours for the site show that the land closest to the properties along Glacier Highway is flatter, so she wondered if the site itself dictates the best buildable sites on each unit lot. She believed they are trying to get in the housing they need on the buildable land they have and it does have topography to work within.

Mr. Salik suggested that the developer relocate the mailbox and water meter that is right as they pull into the subdivision, as they do not want someone stopping there to get their mail there while traffic is trying to get in and out of there.

Director Lawhorne expressed that USPS is not the easiest agency to work with and we typically do not have much say in where they put the mailboxes, but will do their best and will ask about the water meter location as well.

Chair Cole had concerns about the potential confusion with DOT on the existing driveway permit, but believed there is an existing permit and the confusion is on the part of DOT.

Ms. Derr voiced that she heard the concerns from the public in regard to entrance and exit onto Glacier Highway, but that it is a state maintained road, so that is not necessarily in their lane. She

was concerned about the 5 foot buffer, as Wilma residents have a bit more tree coverage and there should be adequate tree buffer between Wilma and this subdivision, but looking at parcel viewer and how the houses on Glacier Highway are pushed back, they are going to be staring at each other's back windows. She noted that would frustrate her as a homeowner, so she would be in favor of increasing the buffer or requiring trees as a visual buffer between the two sites.

Chair Cole noted that the public comment on that came from Wilma and not those homeowners.

MOTION: *by Mr. Epstein to accept staff's findings, analysis, and recommendations, and approve ARP2025 0001, subject to the conditions suggested by staff.*

Ms. Derr objected and proposed a friendly amendment to limit it to 11 lots or less and to add a lighting requirement if staff is able to work through that with Streets and DOT for safety.

No objections to the amendment.

Chair Cole supported the motion, explaining that it gives them what they have in terms of the findings and that the proposal for the 11 lots and one parent lot is the max they are willing to consider, and if it was something different than those 12 lots, they would have to come back to them, and it adds the lighting component. She said it does not speak to the buffer specifically, and she is in agreement with that, because this neighborhood as proposed is in general harmony with the existing neighborhood.

Ms. Keller recommended that the wording in the recommendation read something like creating one parent lot with 11 unit lots than saying 11 unit lots and one parent lot to make it clearer and avoid confusion.

Chair Cole and Mr. Epstein accepted that as a friendly amendment.

Chair Cole asked for any objections to changing the language to "one parent lot and 11 unit lots within that one parent lot".

No objections.

Chair Cole asked for any objections to the original motion with the amended language.

The motion passed.

XI. OTHER BUSINESS

1. Comprehensive Plan Update
"Our Juneau, Our Future"

Director Lawhorne explained that they are undertaking the Juneau Comprehensive Plan, "Our Juneau, Our Future", and they anticipate it to be completed in under three years. She expressed that the comprehensive plan is a 20-year road map on how they are going to grow, and it looks

out 20 to 30 years into the future to address the broad interests that covers a wide range of policies and investments and will be community driven. She added that they need the community's input for this plan to be successful, implemented, and acted upon. The last time the comprehensive plan was adopted was in 2013, which was more of an update than a rewrite, and now it is time to lift up the comprehensive plan to be the long range vision and strategy. She talked about some of the changes that have occurred since the comprehensive plan was last adopted and how comprehensive plans result in real on-the-ground change. She went over what makes a good comprehensive plan, including a detailed assessment of existing conditions, understanding emerging trends, meaningful public engagement, consideration of alternatives, incorporating economic realities, policies that can be implemented, and a concise and uncomplicated visually engaging document. She explained that the comprehensive plan update process will be done in three phases, the listen and learn phase, the imagining possibilities phase that will take place between December 2025 and June 2026, and the developing the plan phase that will take place July 2026 to June 2027. She went over the project timeline and the roles and responsibilities of the Planning Commission, including attending public meetings and events, attending AC Committees, reviewing the draft plan and public comments, recommending action to the Assembly, and acting as the champions of the plan. Director Lawhorne discussed scenario planning and driving forces, which is to take into account all of the things that may impact Juneau and that could derail them, and how to address those scenarios if they happen, so they can pivot and keep moving forward. She stated that scenario planning raises awareness, minimizes blind spots, focuses the discussion on policies that help the community manage risk, and provides a reference case for what could happen if policies stay as they are. She talked about next steps during August 25-28, 2025, including student classroom activities, working with the Alaska Native community focus group, a possible Filipino community focus group, North/West Douglas public meeting, AC Meeting, and a possible Planning Commission presentation on public engagement feedback. In late October of 2025, they will have an AC Committee Meeting, community workshops, and a possible Planning Commission presentation on draft plan vision and guiding principles.

Ms. Keller commented that she is the liaison to the Juneau Commission on Sustainability, and they have repeatedly asked if sustainability will be considered in the comprehensive plan, so she asked if that is something they consider one of the driving forces. She noted that one thing that came to mind is their trash disposal issue.

Director Lawhorne responded that they have had communications with JCOS, and at the Advisory Committee meeting, waste disposal and system were mentioned by committee members and already flagged as a concern.

Mr. Pedersen stated there are CBJ land maps that identify the retained, dispose, keep as parks. He inquired if that was part of the last comp plan process.

Director Lawhorne stated that since she has been here the Lands Division and City Manager's Office have undertaken the Land Management Plan that says what should be retained, disposed,

and kept as parks, and was adopted into the comprehensive plan. She believed that the last time that was fully updated was 2016 and believed that the Lands Division Manager is intending to do an update.

Mr. Gamez asked if there is anything in their future that they can help or regroup with the homeless.

Director Lawhorne responded that likely through scenario planning, she believed mental health, homelessness, and those types of concerns will be raised as situations to address.

XII. STAFF REPORTS

Director Lawhorne reported that she will be on leave starting Friday afternoon, and Scott Ciambor will be acting in her place. She stated that her staff is doing amazing, and the building official, permit manager, database specialist, planners, fire marshal, and general engineering manager went through Tyler Tech training last week, as they are in the process of switching their permit software system. She said they are aiming to be finished in December, but hoped to finish early. She expressed that they are looking at October for a housing forum.

XIII. COMMITTEE REPORTS

Mr. Epstein attended the June 2nd Public Works and Facilities Committee Meeting, where they did a funds transfer to Marine Park CIP from Waterfront Seawalk CIP, Mike Baker International presented an update on the Juneau International Airport Master Plan, and there was a project update on the Juneau Douglas North Crossing.

Mr. Pedersen voiced that the Douglas West Juneau Steering Committee wrapped up their work and he anticipated that the Planning Committee will see that plan soon. He stated that the Short Term Rental Taskforce wrapped up their work and will be providing a recommendation to the Assembly on potential increases in fees for short term rental operators and a potential cap of the number of units an owner can operate based on rental vacancy rates.

Ms. Rintala attended the Comp Plan AC Meeting on June 17th, and shared that she was able to meet Cascadia Partners and some of the Advisory Committee members, and it was great to see them working together. She was impressed with how they teased information out of the Advisory Committee members who were selected for having a broad and diverse wealth of knowledge to offer about Juneau. She was also impressed with the robust public participation process they outlined going forward and watching how they were able to guide discussion among members of the public. She thanked city staff for the expertise they bring to these big projects and identifying the right partners

in contracting and the Advisory Committee members who bring passion for Juneau, as it was all reflected really well in the meeting.

XIV. LIAISON REPORTS

Christine Woll reported that the Assembly passed their budget for the upcoming fiscal year. She said they passed utility rate increases and approved a schedule for that for both water and wastewater for 5% per year for the next 5 years. She noted that it had been recommended that they do 10% a year, but they knew that would be a lot for the community to stomach, so they have to figure out other ways to fund the projects that will not be funded at a 5% increase. She stated they made the decision to officially move forward in raising the properties at Telephone Hill, evicting the people who live up there, and investing \$5.5 million to begin redevelopment of that property. She shared that at the July meeting, they will focus on upcoming elections and figure out what is going to be on the ballot in October, as they may have up to three citizen initiatives that are being certified right now. She added that the Assembly is also considering up to three Assembly initiated ballot questions and considering asking about a seasonal sales tax and bond proposals for our utilities or schools.

XV. CONTINUATION OF PUBLIC PARTICIPATION ON NON-AGENDA ITEMS

XVI. PLANNING COMMISSION COMMENTS AND QUESTIONS

Chair Cole commented that she and Director Lawhorne have been working on the rest of the summer schedule. She said they do not have any cases scheduled for the July 8th meeting, so there will not be a meeting, but they are anticipating hearing a complicated flood plain permit exemption on July 22nd, so she suggested holding a Committee of the Whole Meeting on July 15th. She explained the reason they are not doing it on the July 8th is because Director Lawhorne cannot be there and timing issues with the permit and comments from other agencies, so they will have more information available to them by the 15th. She anticipated the meeting will be educational for the Planning Commission and there would be the opportunity for public testimony at the hearing date, in which they anticipate that night would have a lot of public participation; therefore, splitting that up into two nights makes more sense for the timeline.

Ms. Derr voiced that she will be able to attend the July 15th meeting, but she will be in travel status on the 22nd, so she would need to join remotely.

Chair Cole expressed that she was granted a Rasmuson Sabbatical for three months that will start in September, but plans to attend at least every other meeting while she is away.

She said Mr. Pedersen agreed to be the Chair during that time, but they will need to figure out who will serve as Vice Chair, clerk, or assistant clerk.

XVII. EXECUTIVE SESSION

XVIII. SUPPLEMENTAL MATERIALS

1. Additional Materials

XIX. ADJOURNMENT

The June 24, 2025 Planning Commission Meeting was adjourned at 9:01 p.m.



PLANNING COMMISSION STAFF REPORT
ALTERNATIVE RESIDENTIAL
SUBDIVISION PLAN: ARF2025 0001
HEARING DATE: JULY 22, 2025

(907) 586-0715

CDD_Admin@juneau.gov

www.juneau.org/community-development

155 Heritage Way • Juneau, AK 99801

DATE: July 11, 2025

TO: Mandy Cole, Chair, Planning Commission

BY: David Peterson, Planner II

THROUGH: Jill Lawhorne Director, AICP

PROPOSAL: Final Plan approval for the Brow Tine Subdivision, an Alternative Residential Subdivision (ARS) creating 42 unit lots and one (1) parent-lot (43 total lots).

STAFF RECOMMENDATION: Approval

KEY CONSIDERATIONS FOR REVIEW:

- ARS Final Plan has met conditions of ARP2025-0001.
- Final Plan conforms to ARS Standards in 49.15.950.
- Mailbox location is under review with USPS.
- Clarification and inclusion of common area maintenance provisions in HOA documents will be required as a condition of final plat approval.
- Development will not be phased.

GENERAL INFORMATION	
Property Owner	R&S Construction LLC; Misty Sea Charters & Lodging LLC
Applicant	R&S Construction LLC
Property Address	4760 Glacier Hwy
Legal Description	RAVENWOOD LT 1
Parcel Number	7B1001150063
Zoning	D15
Lot Size	5.1 acres, 221,678 square feet
Water/Sewer	CBJ Water/Sewer provided
Access	Glacier Highway (Collector)
Existing Land Use	Single Residence
Associated Applications	ARP20240001; SMP20250001

ALTERNATIVE ACTIONS:

1. **Amend:** amend the approval to require conditions.
2. **Deny:** deny the permit and adopt new findings for items 1-3 below that support the denial.
3. **Continue:** to a future meeting date if determined that additional information or analysis is needed to make a decision, or if additional testimony is warranted.

ASSEMBLY ACTION REQUIRED:

Assembly action is not required for this permit.

STANDARD OF REVIEW:

- Quasi-judicial decision
- Requires five (5) affirmative votes for approval
- Code Provisions:
 - CBJ 49.15.900
 - CBJ 49.15.950
 - CBJ 49.80

The Commission shall hear and decide the case per CBJ 49.15.900 - Purpose. *The general purpose of this article is to provide reasonable minimum standards and procedures for unit-lot residential communities in which all or some of the lots do not substantially conform to the minimum requirements for a traditional subdivided lot. This article provides a housing option to allow dwellings on unit-lots to be conveyed by long-term leases, less than fee-simple ownership, or fee-simple ownership, including condominium and other common-interest communities*

And per CBJ 49.15.930(a) - *A proposed alternative residential subdivision shall be reviewed according to the requirements of section 49.15.330, conditional use permit, and in the case of an application proposing a change in the number or boundaries of unit-lots, section 49.15.402, major subdivisions, except as otherwise provided in this article. Approval shall be a two-step process, preliminary plan approval and final plan approval. In cases involving a change in the number or boundaries of unit-lots, the preliminary and final plat submissions required by section 49.15.402 shall be included with the preliminary and final plan submissions required by this chapter.*

SITE FEATURES AND ZONING



SURROUNDING ZONING AND LAND USES	
North (D15)	Single-family residential
South (D5)	Single-family residential
East (D5/D15)	Single-family & Multifamily residential
West (D15)	DNR land/Pioneer Home/ Single-Family Residential

SITE FEATURES	
Anadromous	N/A
Flood Zone	N/A
Hazard	No mapped hazard
Hillside	Yes
Wetlands	N/A
Parking District	N/A
Historic District	N/A
Overlay Districts	Mining & Exploration Surface Activities Exclusion District.

BACKGROUND INFORMATION

Project Description – This staff report analysis, and conditions are specific to requirements for an ARS Final Plan. The ARS project can be split between planning elements and land documents.

Target Date	Plan Element	Land Documents
March 11, 2025	Preliminary Plan Approval	
July 22, 2025	Final Plan Approval	Preliminary Plan Approval, Sketch Plat
July 22, 2025	Preliminary Plat Approval	Preliminary Plat Approval, Preliminary Plat
TBD		Final Plat Approval, Phase 1

The applicant has submitted the final plan for an ARS that includes 42 unit lots and a parent lot. During the preliminary plan review process, it was decided at the March 11, 2025, Planning Commission meeting that the unit lots would consist of single-family dwellings. The final plan confirms that each unit lot will consist of a single-family detached dwelling (**Attachment B**).

The final plans meet the criteria set forth in CBJ 49.15.950 for ARS within the D15 zoning district. The parent lot exceeds the minimum required lot size by more than 150%. Vegetative coverage across the site is 46.9%, exceeding the minimum requirement of 30%. Snow storage areas are identified between driveways and will be integrated with bioswale locations for stormwater management (**Attachment B**). The existing drainage easement, as recorded under Plat No. 99-52, remains intact and will be preserved (**Attachment E**). Per code, a note will be included on the final plat stating that accessory dwelling units (ADUs) are not permitted unless the individual unit lot meets standard zoning requirements under CBJ Title 49.

Per CBJ 49.15.950, Final ARS Plan Approval, the applicant has submitted a homeowners’ association agreement (HOA). However, pursuant to subsection (b)(2), the association documents do not address how the common areas will be maintained (**Attachment C**). Addressing common area maintenance will be required as a condition prior to final plat approval.

Regarding mailbox placement, per CBJ 49.15.920(o), the Community Development Department will coordinate with the United States Postal Service to determine appropriate mailbox locations. Final mailbox location may require additional design adjustments or improvements to ensure efficient mail delivery, minimize traffic interference, and comply with CBJ standard details. This coordination and any necessary adjustments should be addressed prior to final plat approval.

No phasing is proposed.

Background -

The table below summarizes relevant history for the lot and proposed development.

Item	Summary
Alternative Residential Subdivision (ARF2025-0001) Final Plan	A final plan of Brow Tine Subdivision, a subdivision of Lot 1, Ravenwood Subdivision. Plan shows locations of open space and drainage/snow storage.
Alternative Residential Subdivision (ARP2024-0001) Preliminary Plan	A plan of Ravenwood Subdivision II/Brow Tine Subdivision, a Subdivision of Lot 1, Ravenwood Subdivision as shown on record plat 2019-3. This subdivision creates 42 unit lots on a parent lot.
2024 Warranty Deed	Warranty deed transferring Lot 1, Ravenwood Subdivision from Grantor, Lowpete Construction Inc., to Grantees, Misty Sea Charters and Lodging LLC, and R&S Construction, LLC.

ANALYSIS

Compliance with Title 49 – Final subdivision plan conforms to section 49.25.950.

Preliminary Plan Conditions of Approval -

Condition	Status	Summary
1: Per 49.15.930(b), Prior to submittal of the ARS final plan, the applicant must provide a plan for landscaping and snow removal.	☒ Met ☐ Unmet ☐ On-going	Submitted plans for landscaping and snow removal may be found in Attachment B.
2: Prior to submittal of the ARS final plan application, the lot coverage and vegetative coverage applied to the parent lot shall be calculated and included on the ARS final plan.	☒ Met ☐ Unmet ☐ On-going	Submitted plans (Attachment B) show calculations for the parent lot, vegetative coverage. Snow storage is included with the drainage.

Homeowners' Association – Per CBJ 49.15.950(b) the formation of a homeowners' association (HOA), or similar entity is required. The applicant has submitted HOA documents that meet the following criteria:

Topic and Code Reference	Summary	Complies
CBJ 49.15.950(b)(1) Preparation	<i>The articles of incorporation and bylaws of the homeowners' association, required under A.S. 34.08 or this chapter, shall be prepared by a lawyer licensed to practice in the state.</i> The Articles of Incorporation for the Brow Tine Unit Owners Association, Inc., a domestic non-profit corporation, were prepared by Christopher Walker, an attorney licensed to practice law in the State of Alaska, with the law firm Faulkner Banfield, located in Juneau, Alaska. This satisfies the requirement under CBJ §49.15.950(b)(1), which mandates that homeowners' association formation documents be prepared by a lawyer licensed in the state.	☒ Yes ☐ No ☐ N/A
CBJ 49.15.950(b)(2) Responsibilities	<i>The homeowners' association shall be responsible for the maintenance of open space, water and sewer utilities, and stormwater control features and drainages. The association documents shall specify how any other common facilities shall be operated and maintained. The association documents shall require homeowners to pay periodic assessments for the operation, maintenance and repair of common facilities. The documents shall require that the governing body of the association adequately maintain common facilities.</i> Article III of the Articles of Incorporation, which outlines the purpose of the Brow Tine Unit Owners Association, Inc., does not explicitly reference the maintenance of open space. To fully comply with CBJ 49.15.950(b)(2), this purpose statement should be amended or clarified to include express responsibility for maintaining open space. This requirement will be a condition of the final	☐ Yes ☒ No ☐ N/A

Topic and Code Reference	Summary	Complies
CBJ 49.15.950(b)(3) Phased Development	<i>If the alternative residential subdivision is phased, the association documents shall specify how the cost to build, operate, and maintain improved open space and common facilities shall be apportioned among homeowners of the initial phase and homeowners of later phases.</i> Phasing has not been proposed.	☐ Yes ☐ No ☒ N/A
CBJ 49.15.950(b)(4) Recording	<i>The homeowners' association documents shall be recorded with the approved final plat.</i> Prior to final plat approval, a copy of the homeowners' association agreement will be provided that meets code.	☐ Yes ☒ No ☐ N/A

AGENCY REVIEW

CDD conducted an agency review comment period between May 28, 2025 – June 11, 2025. No comments were received during this time.

PUBLIC COMMENTS

CDD conducted a public comment period between June 16, 2025 – July 7, 2025. Public notice was mailed to property owners within 500 feet of the subject parcel (**Attachment F**). A public notice sign was also posted on-site two weeks prior to the scheduled hearing (**Attachment G**). Public comments submitted at time of writing this staff report can be found in **Attachment H**.

Name	Summary
Michelle Hebert – Comment 1	Expressed concern about the aesthetic compatibility of the proposed development. They emphasized the importance of designing buildings that complement the character of the existing neighborhood. They also mentioned a nearby housing project currently under construction, describing it as visually out of place and inconsistent with the surrounding area.
Michelle Hebert – Comment 2	Raised concerns about the traffic impacts associated with the addition of 42 new housing units. They noted that the intersection of Vanderbilt Hill Road and Glacier Highway is already congested and potentially unsafe, particularly when making a left turn toward Egan Drive. As a potential solution, they suggested coordination with DOT to explore the possibility of installing a roundabout at that intersection.

FINDINGS

Final plan approval criteria - Per CBJ 49.15.950 the director makes the following findings:

1. *Has the applicant complied with any conditions required in the notice of decision approving the preliminary plan?*

Analysis: The applicant has submitted plans to account for landscaping and snow removal as well as lot and vegetative coverage calculations on the plans (**Attachment B**).

Finding: No. Prior to final plan approval, the conditions will be met or are operational/on-going.

2. *Has the applicant submitted homeowners' association (HOA), or similar, documents to be recorded with the final plat?*

Analysis: The applicant has submitted homeowner's association agreement documents, however they have yet to address site maintenance in accordance with 49.15.950(b) (**Attachment C**).

Finding: No. Prior to final plan approval, the applicant will submit updated HOA documents to be recorded with the Alternative Residential Subdivision final plat.

3. *Does the final plan substantially conform to the approved preliminary plan and requirements of CBJ Title 49.15 Article 900?*

Analysis: The submitted plans conform to the requirements in 49.15.900.

Finding: Yes. The final plan substantially conforms to the approved preliminary plan and conditions.

RECOMMENDATION

Staff recommend the Planning Commission adopt the director's analysis and findings and approve the final plan for the Brow Tine Subdivision, an Alternative Residential Subdivision creating 42 unit-lots and one (1) parent lot.

The approval is subject to the following conditions:

Condition 1: Prior to final plan approval, Revise the homeowners' association (HOA) agreement documents to clearly state that the HOA shall be responsible for the maintenance of all open space, water and sewer utilities, and stormwater management features and drainage systems. The documents must specify the operation and maintenance responsibilities for any other common facilities within the subdivision.

Condition 2: Prior to final plan approval, the developer will need to decide on an approved mailbox for the development.

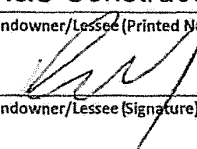
STAFF REPORT ATTACHMENTS

Item	Description
Attachment A	Application Packet_ARF25-01
Attachment B	ARF25-01 Colored Plans
Attachment C	HOA Agreement
Attachment D	NOD ARP24-01
Attachment E	2019 - Plat
Attachment F	Abutters Notice
Attachment G	Public Notice Sign Posted
Attachment H	Public Comments



DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

To be completed by Applicant	PROPERTY LOCATION		
	Physical Address 4670 Glacier Highway		
	Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) Ravenswood Subd		
	Parcel Number(s) 7B1001150063		
	☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____		
	LANDOWNER/ LESSEE		
	Property Owner R&S Construction LLC	Contact Person Rob Worden	
	Mailing Address PO Box 210194	Phone Number(s) 907-321-5015 907-723-8952	
	E-mail Address roblisa@ak.net		
	LANDOWNER/ LESSEE CONSENT Required for Planning Permits, not needed on Building/ Engineering Permits. Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.		
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows: A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission. B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.			
R&S Construction LLC owner Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)			
X  March 27/2025 Landowner/Lessee (Signature) Date			
Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)			
X _____ Date Landowner/Lessee (Signature)			
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.			
APPLICANT If same as LANDOWNER, write "SAME"			
Applicant (Printed Name) same Contact Person			
Mailing Address Phone Number(s)			
E-mail Address			
X _____ march 27/2025 Applicant's Signature Date of Application			

DEPARTMENT USE ONLY BELOW THIS LINE

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

I:\FORMS\PLANFORM\DP\DP_Final Draft.docx

Case Number ARF25-01	Intake Initials 
	Date Received 4/23/2025

Updated 6/2022-- Page 1 of 1



SUBDIVISION AND DEVELOPMENT PLAN APPLICATION

See subdivision hand-outs for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

PROJECT SUMMARY

Number of Existing Parcels 1 Total Land Area 221,678 sq ft Number of Resulting Parcels 43

HAS THE PARCEL BEEN CREATED BY A MINOR SUBDIVISION IN THE PRECEDING 24 MONTHS

☐ NO ☐ YES Case Number _____

TYPE OF SUBDIVISION OR PLATTING APPROVAL REQUESTED

MINOR DEVELOPMENT

(changing or creating 13 or fewer lots)

- ☐ Preliminary Plat (MIP)
- ☐ Final Plat (MIF)
- ☐ Panhandle Subdivision
- ☐ Accretion Survey
- ☐ Boundary Adjustment
- ☐ Lot Consolidation (SLC)
- ☐ Bungalow Lot Subdivision
- ☐ Common Wall/Zero Lot Subdivision
- ☐ Other _____

MAJOR DEVELOPMENT

(changing or creating 14 or more lots)

- ☐ Preliminary Plat (SMP)
- ☐ Final Plat (SMF)
- ☐ Preliminary Development Plan – PUD (PDP)
- ☐ Final Development Plan – PUD (PDF) Preliminary
- ☐ Development Plan – ARS (ARP) Final
- ☒ Development Plan – ARS (ARF)
- ☐ Bungalow Lot Subdivision
- ☐ Common Wall/Zero Lot Subdivision
- ☐ Other _____

ALL REQUIRED DOCUMENTS ATTACHED

- ☐ Pre-application conference notes
- ☐ Narrative including:
 - ☐ Legal description(s) of property to be subdivided
 - ☐ Existing structures on the land
 - ☐ Zoning district
 - ☐ Density
 - ☐ Access
 - ☐ Current and proposed use of any structures
 - ☐ Utilities available
 - ☐ Unique characteristics of the land or structure(s)

☐ Preliminary Plat checklist

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

SUBDIVISION/PLATTING FEES	Fees	Check No.	Receipt	Date
Application Fees	\$ _____			
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Total Fee	\$ <u>3030.00</u>			

For assistance filling out this form, contact the Permit Center at 586-0770.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

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Case Number	Date Received
<u>ARF25-01</u>	<u>4/23/25</u>

Revised October 2019 - Page 1 of 1

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**ARTICLES OF INCORPORATION
BROW TINE UNIT OWNERS ASSOCIATION, INC.
A DOMESTIC NON-PROFIT CORPORATION**

We, the undersigned natural persons of nineteen (19) years of age or more, acting as incorporators of a non-profit corporation under the laws of the State of Alaska, adopt the following Articles of Incorporation.

Article I – Name of the Corporation

The name of the corporation is Brow Tine Unit Owners Association, Inc. (the "Association").

Article II – Period of Duration

The period of existence of the Association is perpetual.

Article III – Purpose

The purpose or purposes for which the Association is organized:

3.1 To operate as the association of a common interest community known as Brow Tine Subdivision located in Juneau, Alaska in accordance with the requirements imposed by the laws of the State of Alaska;

3.2 To carry on any other lawful activity or do anything whatsoever which the Association may deem proper or convenient in connection with the foregoing, or which may be calculated directly or indirectly to promote the interests of the Association; and

3.3 To have, enjoy and exercise all of the rights, powers and privileges which are now or may hereafter be conferred upon non-profit corporations and common interest communities by the laws of the State of Alaska.

Article IV – Termination and Dissolution of Common Interest Community

Termination of the Brow Tine Subdivision and dissolution of the Association will be completed under applicable sections of the Alaska Common Interest Ownership Act and the Alaska Nonprofit Corporation Act.

Article V – Registered Agent

The Association's registered agent is Robin Worden, whose mailing address is PO Box 211574, Auke Bay, AK 99821 and whose physical address is 5750 Glacier Highway, Ste. D-16, Juneau, AK 99801

Article VI – Executive Board

The initial Directors of the Executive Board of the Association will consist of four (4) natural persons. The number of directors shall be fixed by the Bylaws. The names and mailing addresses of the initial Directors of the Executive Board of the Association are:

Robin Worden - PO Box 211574, Auke Bay, AK 99821

Michael Burgess – 1044 Timberwolf, Lane, Juneau, Alaska 99801

Scott Jenkins - 17070 Island View Drive, Juneau, AK 99801

Misty Fitzpatrick - 111 Sea Otter Drive, Coffman Cove, AK 99918

Brow Tine Unit Owners Association, Inc.
Articles of Incorporation

Page 1 of 3

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Article VII – Amendment of Articles of Incorporation, Bylaws and Declaration

Subject to the provisions of the Alaska Common Interests Ownership Act, the Articles of Incorporation, Bylaws and Declaration may be amended only by vote or agreement of Unit Owners comprising at least sixty-seven percent (67%) of the allocated interests in the Association at any duly called regular or special meeting of the Association. The notice of the meeting will set forth a summary of the proposed amendments as required by the Alaska Nonprofit Corporation Act and Bylaws. The Executive Board will submit approved amendments to the appropriate state agency.

Article VIII – Voting Rights

6.1 The voting rights of the Association shall be vested in the Unit Owners. The classes of voting members, the allocated interest in a Unit, and number of votes for each class and Unit shall be set forth in this article and in the Declaration.

6.2 Proof of a Unit Owner's entitlement to vote shall be conclusively established by an instrument duly acknowledged and recorded in the Office of the Recorder for the Juneau Recording District, State of Alaska, designating the person or persons as an owner of a Unit within the Project and subject to the jurisdiction of the Association.

6.3 The Association shall have two (2) classes of voting members, described as follows.

6.3.1 Class A Voting Member.

6.3.1.1 A Unit Owner will be a Class A voting member of the Association.

6.3.1.2 Each Unit is entitled to one (1) vote.

6.3.1.3 Since a Unit Owner may be more than one person, if only one of such persons is present at a meeting of the Association, in person or by proxy, that person shall be entitled to cast the one (1) vote appertaining to that Unit. But, if more than one of such persons is present, in person or by proxy, the vote appertaining to that Unit shall be cast only in accordance with the unanimous agreement of that Unit's owners, and such consent shall be conclusively presumed if any one of the Unit's owners purports to cast the vote appertaining to that Unit without protest being made forthwith by any of the Unit's other owners to the person presiding over the meeting. If the Unit's owners do not unanimously agree, the vote appertaining to that Unit will not be counted.

6.3.2 Class B Voting Member.

6.3.2.1 The Declarant will be a Class B voting member of the Association.

6.3.2.2 Each Unit owned by the Declarant is entitled to three (3) votes.

6.3.2.3 The Declarant's Class B voting membership shall cease and be converted to Class A voting membership when seventy-five percent (75%) of all Units within the planned development have been sold and are owned by Class A voting members. Upon this event, Class B voting members will be converted to Class A voting members and the Association will have one class of voting members.

6.4 Units owned by the Association will not be entitled to a vote.

Article IX – Incorporators

The names and addresses of the persons who are the incorporators of the Association are:

Robin Worden - PO Box 211574, Auke Bay, AK 99821

Michael Burgess – 1044 Timberwolf, Lane, Juneau, Alaska 99801

Scott Jenkins - 17070 Island View Drive, Juneau, AK 99801

Misty Fitzpatrick - 111 Sea Otter Drive, Coffman Cove, AK 99918

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IN WITNESS WHEREOF, we have hereunto set our hands.

Dated Apr 14, 2025


Robin Worden (Apr 14, 2025 18:50 PDT)

Robin Worden

Dated Apr 14, 2025

Michael Burgess
Michael Burgess (Apr 14, 2025 17:54 AKDT)

Michael Burgess

Dated Apr 14, 2025


Scott Jenkins (Apr 14, 2025 19:20 AKDT)

Scott Jenkins

Dated Apr 14, 2025

Misty Fitzpatrick
Misty Fitzpatrick (Apr 14, 2025 17:54 AKDT)

Misty Fitzpatrick

DISCLOSURE OF CORPORATE PURPOSE USING THE NORTH AMERICAN INDUSTRY
CLASSIFICATION SYSTEM
(NAICS)

The 6-digit NAICS industry grouping code which most clearly describes the initial activities of the corporation is: 813990

Articles of Incorporation - Brow Tine Unit Owners Association, Inc.

Final Audit Report

2025-04-15

Created:	2025-04-14
By:	Christopher Walker (cwalker@faulknerbanfield.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAsQshZqK9lfb1Q9GQ2cggQ7-4wq86qKtq

"Articles of Incorporation - Brow Tine Unit Owners Association, Inc." History

 Document created by Christopher Walker (cwalker@faulknerbanfield.com)
2025-04-14 - 11:09:33 PM GMT

 Document emailed to Robin Worden (roblisa@ak.net) for signature
2025-04-14 - 11:09:38 PM GMT

 Document emailed to Michael Burgess (admin@tongasselectric.com) for signature
2025-04-14 - 11:09:38 PM GMT

 Document emailed to Misty Fitzpatrick (admin@tongasselectric.com) for signature
2025-04-14 - 11:09:38 PM GMT

 Document emailed to Scott Jenkins (iglooracing-1@yahoo.com) for signature
2025-04-14 - 11:09:38 PM GMT

 Email sent to Scott Jenkins (iglooracing-1@yahoo.com) bounced and could not be delivered
2025-04-14 - 11:09:42 PM GMT

 Christopher Walker (cwalker@faulknerbanfield.com) replaced signer Scott Jenkins (iglooracing-1@yahoo.com) with Scott Jenkins (iglooracing_1@yahoo.com)
2025-04-14 - 11:12:41 PM GMT

 Document emailed to Scott Jenkins (iglooracing_1@yahoo.com) for signature
2025-04-14 - 11:12:42 PM GMT

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2025-04-14 - 11:34:20 PM GMT

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2025-04-15 - 1:48:48 AM GMT

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Signature Date: 2025-04-15 - 1:50:22 AM GMT - Time Source: server

 Document e-signed by Michael Burgess (admin@tongasselectric.com)

Signature Date: 2025-04-15 - 1:58:05 AM GMT - Time Source: server

 Email viewed by Misty Fitzpatrick (admin@tongasselectric.com)

2025-04-15 - 1:58:14 AM GMT

 Document e-signed by Misty Fitzpatrick (admin@tongasselectric.com)

Signature Date: 2025-04-15 - 1:58:35 AM GMT - Time Source: server

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2025-04-15 - 3:19:43 AM GMT

 Document e-signed by Scott Jenkins (iglooracing_1@yahoo.com)

Signature Date: 2025-04-15 - 3:20:13 AM GMT - Time Source: server

 Agreement completed.

2025-04-15 - 3:20:13 AM GMT

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State of Alaska
Division of Corporations, Business and Professional Licensing
CORPORATIONS SECTION
PO Box 110806
Juneau, AK 99811-0806
Phone: (907) 465-2550
Fax: (907) 465-2974
Website: www.commerce.alaska.gov/occ

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CONTACT INFORMATION SHEET

Please return this document with your filing. This information will only be used to resolve questions with the filings attached. **NOTE:** this form will not be filed for record or appear online.

Name of entity as it appears on filing:

Brow Tine Unit Owners Association, Inc.

To resolve questions with this filing, contact:

Name: Christopher Walker

Email: cwalker@faulknerbanfield.com

Phone: 907-523-6126

Mailing address: One Sealaska Plaza, Suite 300, Juneau, AK 99801

Return documents to:

Name: Robin Worden

Company: Brow Tine Unit Owners Association, Inc.

Mailing address: PO Box 211574, Auke Bay, AK 99821

Attach this form to your filings. Send all documents to:
State of Alaska, Corporations Section, PO Box 110806, Juneau, AK 99811-0806

STANDARD PROCESSING TIME for complete and correct applications submitted to this office is approximately 10-15 business days. All applications are reviewed in the date order they are received.



**PLANNING COMMISSION
NOTICE OF DECISION**

Date: March 12, 2025
File No.: ARP2024 0001

R&S Construction LLC
P.O. Box 210194
Auke Bay, AK 99821
roblisa@ak.net

Proposal: Preliminary Plan approval for the Ravenwood/Brow Tine Subdivision, an Alternative Residential Subdivision creating 42 Unit Lots with common-wall dwellings and one (1) parent-lot.

Property Address: 4670 Glacier Hwy

Legal Description: RAVENWOOD LT 1

Parcel Code No.: 7B1001150063

Hearing Date: March 11, 2025

The Planning Commission, at its regular public meeting, adopted the analysis and findings listed in the attached memorandum dated March 4, 2025, and approved the Alternative Residential Subdivision Preliminary Plan for the Ravenwood/Brow Tine Subdivision, an Alternative Residential Subdivision creating 42 Unit Lots with common-wall dwellings and one (1) parent-lot, to be conducted as described in the project description and project drawings submitted with the application and with the following conditions:

Condition 1: Per 49.15.930(b), prior to submittal of the ARS final plan, the applicant must provide a plan for landscaping and snow removal.

Condition 2: Prior to submittal of the ARS final plan application, the lot coverage and vegetative coverage applied to the parent lot shall be calculated and included on the ARS final plan.

Planning Commission

(907) 586-0715

PC_Comments@juneau.gov

www.juneau.org/community-development/planning-commission

155 Heritage Way • Juneau, AK 99801

R&S Construction LLC
File No.: ARP2024 0001
March 12, 2025
Page 2 of 2

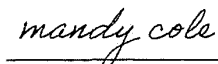
Attachments: March 4, 2025, memorandum from David Peterson, Community Development, to the CBJ Planning Commission regarding ARP2024 0001.

This Notice of Decision does not authorize construction activity. Prior to starting any project, it is the applicant's responsibility to obtain the required building permits.

This Notice of Decision constitutes a final decision of the CBJ Planning Commission. Appeals must be brought to the CBJ Assembly in accordance with CBJ 01.50.030. Appeals must be filed by 4:30 P.M. on the day twenty days from the date the decision is filed with the City Clerk, pursuant to CBJ 01.50.030 (c). Any action by the applicant in reliance on the decision of the Planning Commission shall be at the risk that the decision may be reversed on appeal (CBJ 49.20.120).

Effective Date: The permit is effective upon approval by the Commission, March 11, 2025.

Expiration Date: The permit will expire 18 months after the effective date, or September 11, 2026, if no Building Permit has been issued and substantial construction progress has not been made in accordance with the plans for which the development permit was authorized. Application for permit extension must be submitted thirty days prior to the expiration date.



Mandy Cole, Chair
Planning Commission

3/14/2025

Date



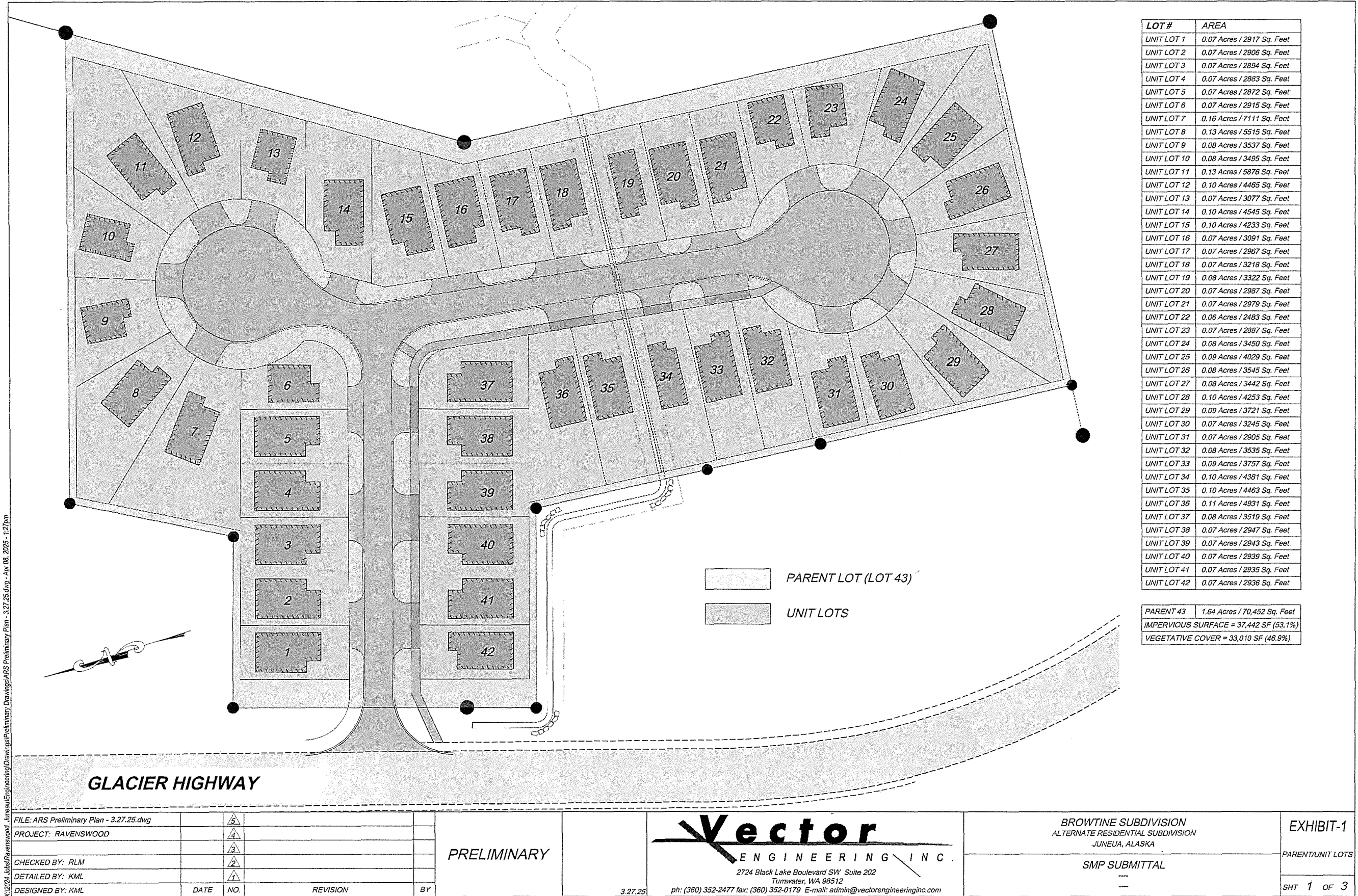
Filed With City Clerk

3/14/2025

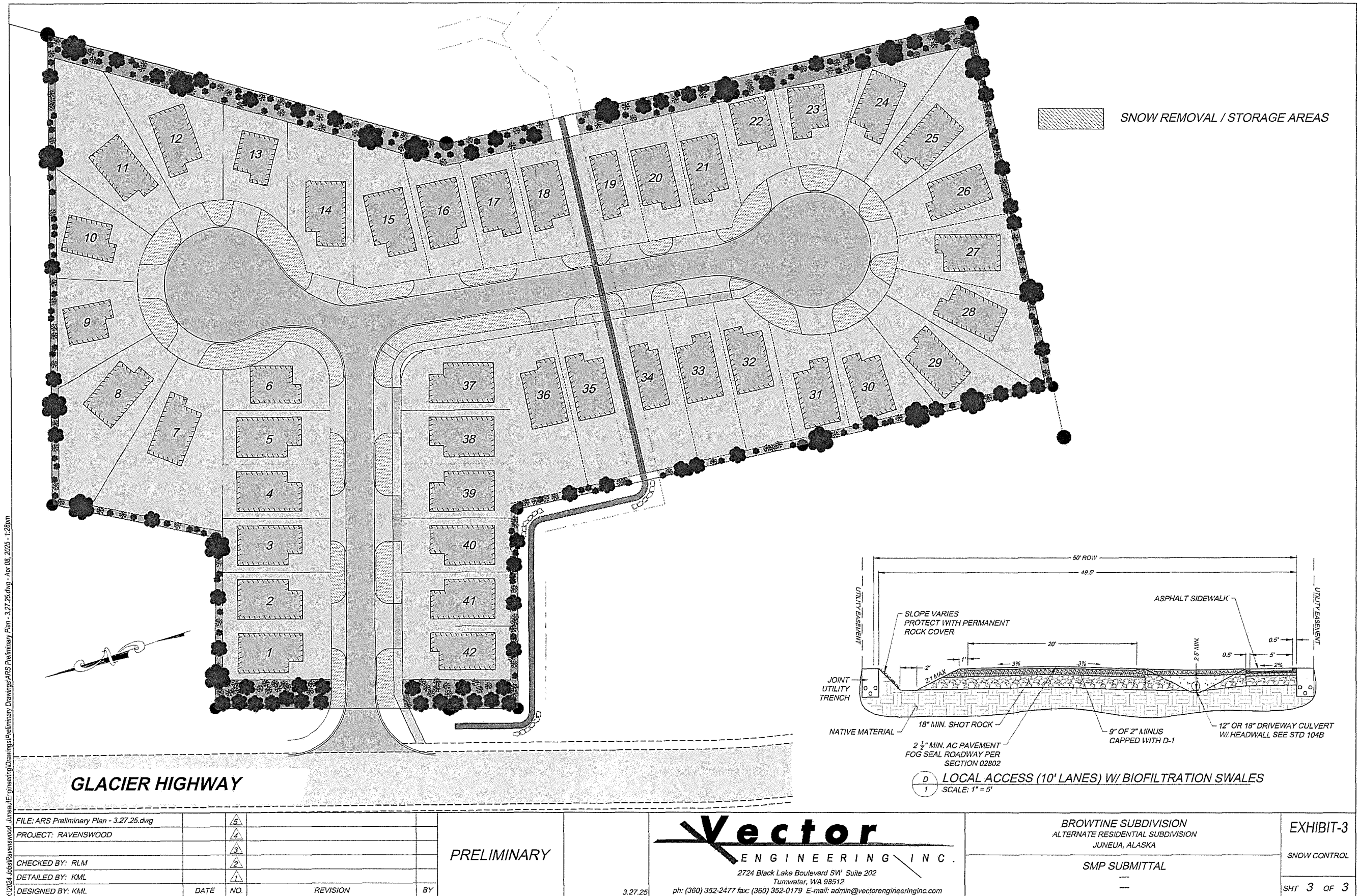
Date

cc: Plan Review

NOTE: The Americans with Disabilities Act (ADA) is a federal civil rights law that may affect this development project. ADA regulations have access requirements above and beyond CBJ-adopted regulations. Owners and designers are responsible for compliance with ADA. Contact an ADA - trained architect or other ADA trained personnel with questions about the ADA: Department of Justice (202) 272-5434, or fax (202) 272-5447, NW Disability Business Technical Center (800) 949-4232, or fax (360) 438-3208.







X:\2024\Jobs\Ravenswood\Juneau\Engineering\Drawings\ARF Preliminary Plan - 3.27.25.dwg - Apr 02, 2025 - 10:19am



LOT #	AREA
UNIT LOT 1	0.07 Acres / 2917 Sq. Feet
UNIT LOT 2	0.07 Acres / 2906 Sq. Feet
UNIT LOT 3	0.07 Acres / 2894 Sq. Feet
UNIT LOT 4	0.07 Acres / 2883 Sq. Feet
UNIT LOT 5	0.07 Acres / 2872 Sq. Feet
UNIT LOT 6	0.07 Acres / 2915 Sq. Feet
UNIT LOT 7	0.16 Acres / 7111 Sq. Feet
UNIT LOT 8	0.13 Acres / 5515 Sq. Feet
UNIT LOT 9	0.08 Acres / 3537 Sq. Feet
UNIT LOT 10	0.08 Acres / 3495 Sq. Feet
UNIT LOT 11	0.13 Acres / 5876 Sq. Feet
UNIT LOT 12	0.10 Acres / 4465 Sq. Feet
UNIT LOT 13	0.07 Acres / 3077 Sq. Feet
UNIT LOT 14	0.10 Acres / 4545 Sq. Feet
UNIT LOT 15	0.10 Acres / 4233 Sq. Feet
UNIT LOT 16	0.07 Acres / 3091 Sq. Feet
UNIT LOT 17	0.07 Acres / 2967 Sq. Feet
UNIT LOT 18	0.07 Acres / 3218 Sq. Feet
UNIT LOT 19	0.08 Acres / 3322 Sq. Feet
UNIT LOT 20	0.07 Acres / 2987 Sq. Feet
UNIT LOT 21	0.07 Acres / 2979 Sq. Feet
UNIT LOT 22	0.06 Acres / 2483 Sq. Feet
UNIT LOT 23	0.07 Acres / 2887 Sq. Feet
UNIT LOT 24	0.08 Acres / 3450 Sq. Feet
UNIT LOT 25	0.09 Acres / 4029 Sq. Feet
UNIT LOT 26	0.08 Acres / 3545 Sq. Feet
UNIT LOT 27	0.08 Acres / 3442 Sq. Feet
UNIT LOT 28	0.10 Acres / 4253 Sq. Feet
UNIT LOT 29	0.09 Acres / 3721 Sq. Feet
UNIT LOT 30	0.07 Acres / 3245 Sq. Feet
UNIT LOT 31	0.07 Acres / 2905 Sq. Feet
UNIT LOT 32	0.08 Acres / 3535 Sq. Feet
UNIT LOT 33	0.09 Acres / 3757 Sq. Feet
UNIT LOT 34	0.10 Acres / 4381 Sq. Feet
UNIT LOT 35	0.10 Acres / 4463 Sq. Feet
UNIT LOT 36	0.11 Acres / 4931 Sq. Feet
UNIT LOT 37	0.08 Acres / 3519 Sq. Feet
UNIT LOT 38	0.07 Acres / 2947 Sq. Feet
UNIT LOT 39	0.07 Acres / 2943 Sq. Feet
UNIT LOT 40	0.07 Acres / 2939 Sq. Feet
UNIT LOT 41	0.07 Acres / 2935 Sq. Feet
UNIT LOT 42	0.07 Acres / 2936 Sq. Feet

PARENT 43	1.64 Acres / 70,452 Sq. Feet
VEGETATIVE COVER = 19,870 SF (28.2%)	

FILE: ARS Preliminary Plan - 3.27.25.dwg	5			
PROJECT: RAVENSWOOD	4			
CHECKED BY: RLM	3			
DETAILED BY: KML	2			
DESIGNED BY: KML	1			
DATE	NO.	REVISION	BY	

PRELIMINARY



2724 Black Lake Boulevard SW Suite 202
Tumwater, WA 98512
ph: (360) 352-2477 fax: (360) 352-0179 E-mail: admin@vectorengineeringinc.com

BROWTIME SUBDIVISION ALTERNATE RESIDENTIAL SUBDIVISION JUNEAU, ALASKA	EXHIBIT-1
SMP SUBMITTAL	PARENT/UNIT LOTS
	SHT 1 OF 3





X:\2024 Jobs\Ravenswood Juneau\Engineering\Drawings\ARS Preliminary Plan - 3.27.25.dwg - Apr 02, 2025 - 10:19am

FILE: ARS Preliminary Plan - 3.27.25.dwg		5		
PROJECT: RAVENSWOOD		4		
CHECKED BY: RLM		3		
DETAILED BY: KML		2		
DESIGNED BY: KML		1		
DATE	NO.	REVISION	BY	

PRELIMINARY



Vector
ENGINEERING INC.
2724 Black Lake Boulevard SW Suite 202
Tumwater, WA 98512
ph: (360) 352-2477 fax: (360) 352-0179 E-mail: admin@vectorengineeringinc.com

3.27.25

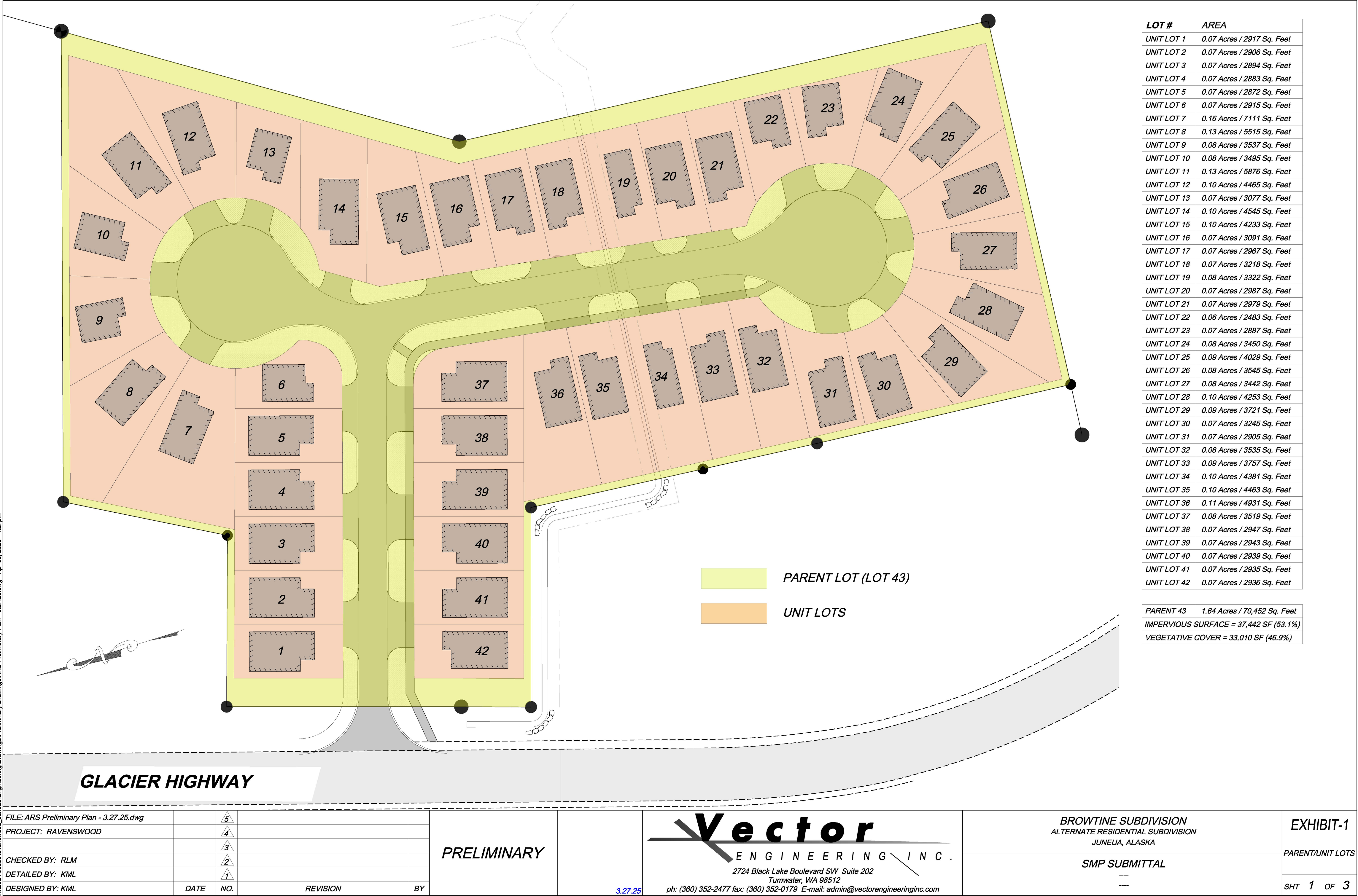
BROWTINE SUBDIVISION
ALTERNATE RESIDENTIAL SUBDIVISION
JUNEAU, ALASKA

SMP SUBMITTAL

EXHIBIT-3

SNOW CONTROL

SHT 3 OF 3







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JUNEAU

APR 15 2025

CBPL

**ARTICLES OF INCORPORATION
BROW TINE UNIT OWNERS ASSOCIATION, INC.
A DOMESTIC NON-PROFIT CORPORATION**

We, the undersigned natural persons of nineteen (19) years of age or more, acting as incorporators of a non-profit corporation under the laws of the State of Alaska, adopt the following Articles of Incorporation.

Article I – Name of the Corporation

The name of the corporation is Brow Tine Unit Owners Association, Inc. (the "Association").

Article II – Period of Duration

The period of existence of the Association is perpetual.

Article III – Purpose

The purpose or purposes for which the Association is organized:

3.1 To operate as the association of a common interest community known as Brow Tine Subdivision located in Juneau, Alaska in accordance with the requirements imposed by the laws of the State of Alaska;

3.2 To carry on any other lawful activity or do anything whatsoever which the Association may deem proper or convenient in connection with the foregoing, or which may be calculated directly or indirectly to promote the interests of the Association; and

3.3 To have, enjoy and exercise all of the rights, powers and privileges which are now or may hereafter be conferred upon non-profit corporations and common interest communities by the laws of the State of Alaska.

Article IV – Termination and Dissolution of Common Interest Community

Termination of the Brow Tine Subdivision and dissolution of the Association will be completed under applicable sections of the Alaska Common Interest Ownership Act and the Alaska Nonprofit Corporation Act.

Article V – Registered Agent

The Association's registered agent is Robin Worden, whose mailing address is PO Box 211574, Auke Bay, AK 99821 and whose physical address is 5750 Glacier Highway, Ste. D-16, Juneau, AK 99801

Article VI – Executive Board

The initial Directors of the Executive Board of the Association will consist of four (4) natural persons. The number of directors shall be fixed by the Bylaws. The names and mailing addresses of the initial Directors of the Executive Board of the Association are:

Robin Worden - PO Box 211574, Auke Bay, AK 99821

Michael Burgess – 1044 Timberwolf, Lane, Juneau, Alaska 99801

Scott Jenkins - 17070 Island View Drive, Juneau, AK 99801

Misty Fitzpatrick - 111 Sea Otter Drive, Coffman Cove, AK 99918

Brow Tine Unit Owners Association, Inc.
Articles of Incorporation

Page 1 of 3

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APR 15 2025

CBPL

Article VII – Amendment of Articles of Incorporation, Bylaws and Declaration

Subject to the provisions of the Alaska Common Interests Ownership Act, the Articles of Incorporation, Bylaws and Declaration may be amended only by vote or agreement of Unit Owners comprising at least sixty-seven percent (67%) of the allocated interests in the Association at any duly called regular or special meeting of the Association. The notice of the meeting will set forth a summary of the proposed amendments as required by the Alaska Nonprofit Corporation Act and Bylaws. The Executive Board will submit approved amendments to the appropriate state agency.

Article VIII – Voting Rights

6.1 The voting rights of the Association shall be vested in the Unit Owners. The classes of voting members, the allocated interest in a Unit, and number of votes for each class and Unit shall be set forth in this article and in the Declaration.

6.2 Proof of a Unit Owner's entitlement to vote shall be conclusively established by an instrument duly acknowledged and recorded in the Office of the Recorder for the Juneau Recording District, State of Alaska, designating the person or persons as an owner of a Unit within the Project and subject to the jurisdiction of the Association.

6.3 The Association shall have two (2) classes of voting members, described as follows.

6.3.1 Class A Voting Member.

6.3.1.1 A Unit Owner will be a Class A voting member of the Association.

6.3.1.2 Each Unit is entitled to one (1) vote.

6.3.1.3 Since a Unit Owner may be more than one person, if only one of such persons is present at a meeting of the Association, in person or by proxy, that person shall be entitled to cast the one (1) vote appertaining to that Unit. But, if more than one of such persons is present, in person or by proxy, the vote appertaining to that Unit shall be cast only in accordance with the unanimous agreement of that Unit's owners, and such consent shall be conclusively presumed if any one of the Unit's owners purports to cast the vote appertaining to that Unit without protest being made forthwith by any of the Unit's other owners to the person presiding over the meeting. If the Unit's owners do not unanimously agree, the vote appertaining to that Unit will not be counted.

6.3.2 Class B Voting Member.

6.3.2.1 The Declarant will be a Class B voting member of the Association.

6.3.2.2 Each Unit owned by the Declarant is entitled to three (3) votes.

6.3.2.3 The Declarant's Class B voting membership shall cease and be converted to Class A voting membership when seventy-five percent (75%) of all Units within the planned development have been sold and are owned by Class A voting members. Upon this event, Class B voting members will be converted to Class A voting members and the Association will have one class of voting members.

6.4 Units owned by the Association will not be entitled to a vote.

Article IX – Incorporators

The names and addresses of the persons who are the incorporators of the Association are:

Robin Worden - PO Box 211574, Auke Bay, AK 99821

Michael Burgess – 1044 Timberwolf, Lane, Juneau, Alaska 99801

Scott Jenkins - 17070 Island View Drive, Juneau, AK 99801

Misty Fitzpatrick - 111 Sea Otter Drive, Coffman Cove, AK 99918

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APR 15 2025

CBPL

IN WITNESS WHEREOF, we have hereunto set our hands.

Dated Apr 14, 2025


Robin Worden (Apr 14, 2025 18:50 PDT)

Robin Worden

Dated Apr 14, 2025


Michael Burgess (Apr 14, 2025 17:58 AKDT)

Michael Burgess

Dated Apr 14, 2025


Scott Jenkins (Apr 14, 2025 19:20 AKDT)

Scott Jenkins

Dated Apr 14, 2025


Misty Fitzpatrick (Apr 14, 2025 17:58 AKDT)

Misty Fitzpatrick

DISCLOSURE OF CORPORATE PURPOSE USING THE NORTH AMERICAN INDUSTRY
CLASSIFICATION SYSTEM
(NAICS)

The 6-digit NAICS industry grouping code which most clearly describes the initial activities of the corporation is: 813990

Articles of Incorporation - Brow Tine Unit Owners Association, Inc.

Final Audit Report

2025-04-15

Created:	2025-04-14
By:	Christopher Walker (cwalker@faulknerbanfield.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAsQshZqK9lfb1Q9GQ2cagQ7-4wq86qKtq

"Articles of Incorporation - Brow Tine Unit Owners Association, Inc." History

 Document created by Christopher Walker (cwalker@faulknerbanfield.com)
2025-04-14 - 11:09:33 PM GMT

 Document emailed to Robin Worden (roblisa@ak.net) for signature
2025-04-14 - 11:09:38 PM GMT

 Document emailed to Michael Burgess (admin@tongasselectric.com) for signature
2025-04-14 - 11:09:38 PM GMT

 Document emailed to Misty Fitzpatrick (admin@tongasselectric.com) for signature
2025-04-14 - 11:09:38 PM GMT

 Document emailed to Scott Jenkins (iglooracing-1@yahoo.com) for signature
2025-04-14 - 11:09:38 PM GMT

 Email sent to Scott Jenkins (iglooracing-1@yahoo.com) bounced and could not be delivered
2025-04-14 - 11:09:42 PM GMT

 Christopher Walker (cwalker@faulknerbanfield.com) replaced signer Scott Jenkins (iglooracing-1@yahoo.com) with Scott Jenkins (iglooracing_1@yahoo.com)
2025-04-14 - 11:12:41 PM GMT

 Document emailed to Scott Jenkins (iglooracing_1@yahoo.com) for signature
2025-04-14 - 11:12:42 PM GMT

 Email sent to Scott Jenkins (iglooracing-1@yahoo.com) bounced and could not be delivered
2025-04-14 - 11:12:47 PM GMT

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APR 15 2025

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Adobe Acrobat Sign

 Email viewed by Michael Burgess (admin@tongasselectric.com)

2025-04-14 - 11:34:20 PM GMT

 Email viewed by Robin Worden (roblisa@ak.net)

2025-04-15 - 1:48:48 AM GMT

 Document e-signed by Robin Worden (roblisa@ak.net)

Signature Date: 2025-04-15 - 1:50:22 AM GMT - Time Source: server

 Document e-signed by Michael Burgess (admin@tongasselectric.com)

Signature Date: 2025-04-15 - 1:58:05 AM GMT - Time Source: server

 Email viewed by Misty Fitzpatrick (admin@tongasselectric.com)

2025-04-15 - 1:58:14 AM GMT

 Document e-signed by Misty Fitzpatrick (admin@tongasselectric.com)

Signature Date: 2025-04-15 - 1:58:35 AM GMT - Time Source: server

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2025-04-15 - 3:19:43 AM GMT

 Document e-signed by Scott Jenkins (iglooracing_1@yahoo.com)

Signature Date: 2025-04-15 - 3:20:13 AM GMT - Time Source: server

 Agreement completed.

2025-04-15 - 3:20:13 AM GMT

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APR 15 2025

CBPL



Adobe Acrobat Sign



State of Alaska
Division of Corporations, Business and Professional Licensing
CORPORATIONS SECTION
PO Box 110806
Juneau, AK 99811-0806
Phone: (907) 465-2550
Fax: (907) 465-2974
Website: www.commerce.alaska.gov/occ

DO NOT STAMP ABOVE THIS BOX
Office Use Only **CORP**

RECEIVED
JUNEAU
APR 15 2025
CBPL

CONTACT INFORMATION SHEET

Please return this document with your filing. This information will only be used to resolve questions with the filings attached. **NOTE:** this form will not be filed for record or appear online.

Name of entity as it appears on filing:

Brow Tine Unit Owners Association, Inc.

To resolve questions with this filing, contact:

Name: Christopher Walker

Email: cwalker@faulknerbanfield.com

Phone: 907-523-6126

Mailing address: One Sealaska Plaza, Suite 300, Juneau, AK 99801

Return documents to:

Name: Robin Worden

Company: Brow Tine Unit Owners Association, Inc.

Mailing address: PO Box 211574, Auke Bay, AK 99821

Attach this form to your filings. Send all documents to:
State of Alaska, Corporations Section, PO Box 110806, Juneau, AK 99811-0806

STANDARD PROCESSING TIME for complete and correct applications submitted to this office is approximately 10-15 business days. All applications are reviewed in the date order they are received.



**PLANNING COMMISSION
NOTICE OF DECISION**

Date: March 12, 2025
File No.: ARP2024 0001

R&S Construction LLC
P.O. Box 210194
Auke Bay, AK 99821
roblisa@ak.net

Proposal: Preliminary Plan approval for the Ravenwood/Brow Tine Subdivision, an Alternative Residential Subdivision creating 42 Unit Lots with common-wall dwellings and one (1) parent-lot.

Property Address: 4670 Glacier Hwy

Legal Description: RAVENWOOD LT 1

Parcel Code No.: 7B1001150063

Hearing Date: March 11, 2025

The Planning Commission, at its regular public meeting, adopted the analysis and findings listed in the attached memorandum dated March 4, 2025, and approved the Alternative Residential Subdivision Preliminary Plan for the Ravenwood/Brow Tine Subdivision, an Alternative Residential Subdivision creating 42 Unit Lots with common-wall dwellings and one (1) parent-lot, to be conducted as described in the project description and project drawings submitted with the application and with the following conditions:

Condition 1: Per 49.15.930(b), prior to submittal of the ARS final plan, the applicant must provide a plan for landscaping and snow removal.

Condition 2: Prior to submittal of the ARS final plan application, the lot coverage and vegetative coverage applied to the parent lot shall be calculated and included on the ARS final plan.

Planning Commission

(907) 586-0715

PC_Comments@juneau.gov

www.juneau.org/community-development/planning-commission

155 Heritage Way • Juneau, AK 99801

R&S Construction LLC
File No.: ARP2024 0001
March 12, 2025
Page 2 of 2

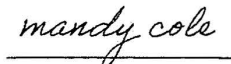
Attachments: March 4, 2025, memorandum from David Peterson, Community Development, to the CBJ Planning Commission regarding ARP2024 0001.

This Notice of Decision does not authorize construction activity. Prior to starting any project, it is the applicant's responsibility to obtain the required building permits.

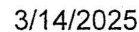
This Notice of Decision constitutes a final decision of the CBJ Planning Commission. Appeals must be brought to the CBJ Assembly in accordance with CBJ 01.50.030. Appeals must be filed by 4:30 P.M. on the day twenty days from the date the decision is filed with the City Clerk, pursuant to CBJ 01.50.030 (c). Any action by the applicant in reliance on the decision of the Planning Commission shall be at the risk that the decision may be reversed on appeal (CBJ 49.20.120).

Effective Date: The permit is effective upon approval by the Commission, March 11, 2025.

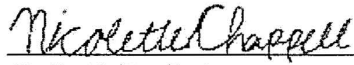
Expiration Date: The permit will expire 18 months after the effective date, or September 11, 2026, if no Building Permit has been issued and substantial construction progress has not been made in accordance with the plans for which the development permit was authorized. Application for permit extension must be submitted thirty days prior to the expiration date.



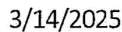
Mandy Cole, Chair
Planning Commission



Date



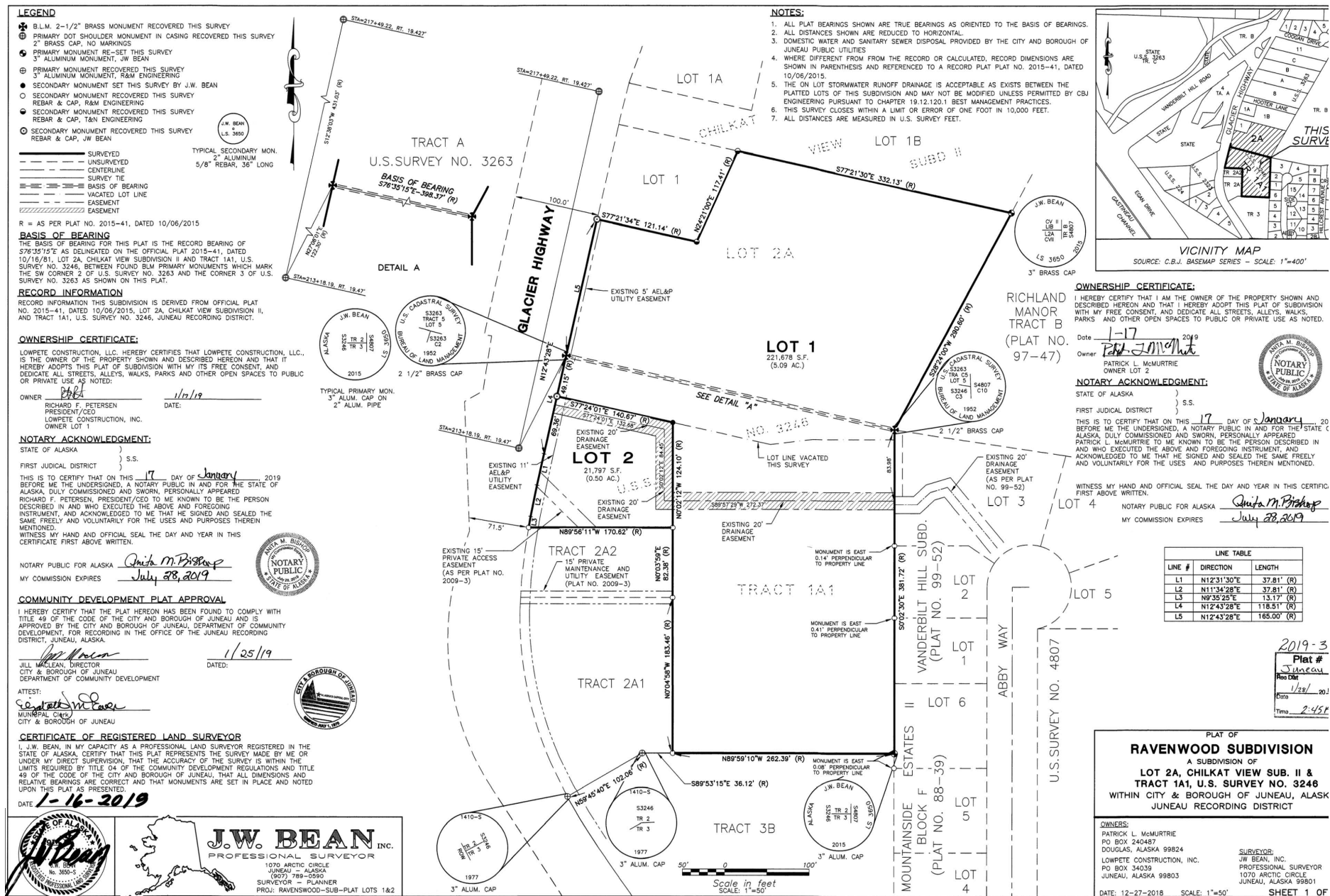
Filed With City Clerk



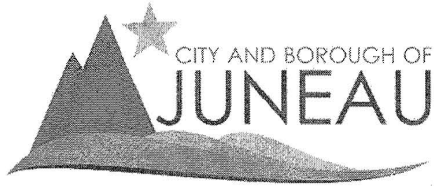
Date

cc: Plan Review

NOTE: The Americans with Disabilities Act (ADA) is a federal civil rights law that may affect this development project. ADA regulations have access requirements above and beyond CBJ-adopted regulations. Owners and designers are responsible for compliance with ADA. Contact an ADA - trained architect or other ADA trained personnel with questions about the ADA: Department of Justice (202) 272-5434, or fax (202) 272-5447, NW Disability Business Technical Center (800) 949-4232, or fax (360) 438-3208.



Juneau 2019-2



Treasury Division
155 S. Seward Street
Juneau, AK 99801
(907) 586-0377 Phone
(907) 586-5367 Fax

CERTIFICATION OF TAXES AND ASSESSMENTS PAID

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Judicial District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described real property is carried on the tax records in the name of:

State of Alaska Department of Natural Resources

Current Owner

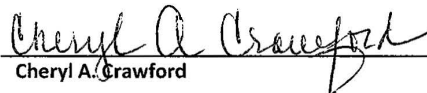
USS 3853 FR

Legal Description

3D0201000050

Parcel Code Number

and that, according to the records in my possession, there are no taxes assessed against said parcel as this parcel is owned by the State of Alaska, which is a tax exempt entity; and any special assessments assessed against said parcel and in favor of the City and Borough of Juneau have been paid in full.

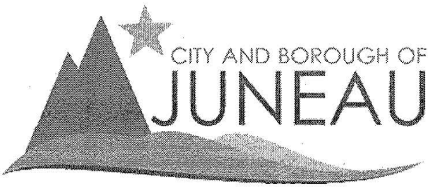

Cheryl A. Crawford

January 22, 2019

Date

This Certification of Payment of Taxes is valid through December 31, 2019

Juneau 2019-2



Treasury Division
155 S. Seward Street
Juneau, AK 99801
(907) 586-0377 Phone
(907) 586-5367 Fax

CERTIFICATION OF TAXES AND ASSESSMENTS PAID

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Judicial District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described real property is carried on the tax records in the name of:

City and Borough of Juneau Lands and Resources

Current Owner

USS 3853 LT 2 FR

Legal Description

3D0201000070

Parcel Code Number

and that, according to the records in my possession, there are no taxes assessed against said parcel as this parcel is owned by the City and Borough of Juneau, which is a tax exempt entity; and any special assessments assessed against said parcel and in favor of the City and Borough of Juneau have been paid in full.


Cheryl A. Crawford

January 22, 2019

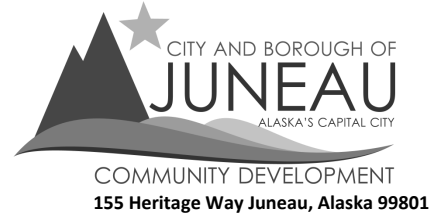
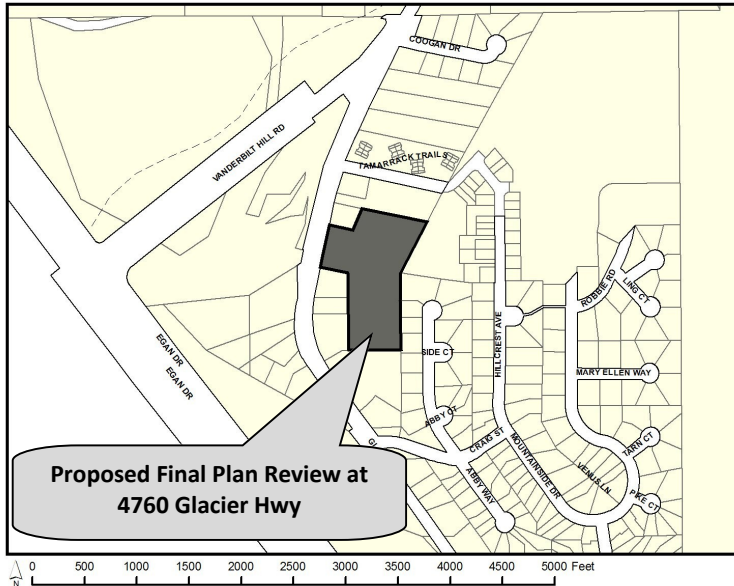
Date

This Certification of Payment of Taxes is valid through December 31, 2019

Invitation to Comment

On a proposal to be heard by the CBJ Planning Commission

Your Community, Your Voice



TO

An Alternative Residential Subdivision Final Plan Approval has been submitted for consideration and public hearing by the Planning Commission for **creating 42 unit lots and one parent lot (43 total) at 4760 Glacier Highway** in a **D15 zone**.

PROJECT INFORMATION:

Project Information can be found at:

<https://juneau.org/community-development/short-term-projects>

PLANNING COMMISSION DOCUMENTS:

Staff Report expected to be posted **July 14, 2025** at

<https://juneau.org/community-development/planning-commission>

Find hearing results, meeting minutes, and more here, as well.

Now through July 7	July 8 — noon, July 18	HEARING DATE & TIME: 7:00 pm, July 22, 2025	July 26
Comments received during this period will be sent to the Planner, David Peterson , to be included as an attachment in the staff report.	Comments received during this period will be sent to Commissioners to read in preparation for the hearing.	This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting https://juneau.zoom.us/j/85421744892 and use the Webinar ID: 854 2174 4892 OR join by telephone, calling: 1-253-215-8782 and enter the Webinar ID (above). You may also participate in person in City Hall Assembly Chambers, 155 Heritage Way Juneau, Alaska.	The results of the hearing will be posted online.
FOR DETAILS OR QUESTIONS, Phone: (907)586-0753 ext. 4132 Email: pc_comments@juneau.gov or David.Peterson@juneau.gov Mail: Community Development, 155 Heritage Way, Juneau AK 99801			
Case No.: ARF2025 0001 Parcel No.: 7B1001150063 CBJ Parcel Viewer: http://epv.juneau.org			

Printed June 16, 2025



To: [PC Comments; David Peterson](#)
Subject: sMP2025 0001
Date: Friday, June 20, 2025 7:35:45 PM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

My only comment on this development is that the buildings are built that are complimentary asthetically to the existing neighborhood.

The housing development that is currently underway above this proposed area, is horrific. The 3 dorm style buildings are completely out of place and a disgrace.

Sent: Monday, June 23, 2025 3:34 PM

To: PC_Comments <PC_comments@juneau.gov>

Subject: SMP2025 0001

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

I'd like to add another comment. In creating an additional 42 housing units, there will be additional traffic.

The intersection of Vanderbilt Hill road and Glacier Highway has become very congested and dangerous. Turning left to get to Egan Highway is challenging

Suggestion: work with DOT and have that intersection become a round about.



**PLANNING COMMISSION STAFF REPORT
MAJOR SUBDIVISION SMP2025 0001
HEARING DATE: JULY 22, 2025**

(907) 586-0715

CDD_Admin@juneau.gov

www.juneau.org/community-development

155 Heritage Way • Juneau, AK 99801

DATE: July 11, 2025
TO: Mandy Cole, Chair, Planning Commission
BY: David Peterson, Planner II 
THROUGH: Jill Lawhorne, Director, AICP

PROPOSAL: Applicant requests a preliminary plat review for an Alternative Residential Subdivision creating 42 residential lots and a single parent lot in a D15 zone.

STAFF RECOMMENDATION: Approval with conditions

KEY CONSIDERATIONS FOR REVIEW:

- Preliminary Plat may be subject to conditions of ARF2025-0001.
- Preliminary Plat is consistent with Title 49, Alternative Residential Subdivision code.
- 42 dwellings will require automatic sprinkler systems in accordance with D107.1 due to single access.

GENERAL INFORMATION	
Property Owner	R&S Construction LLC; Misty Sea Charters & Lodging LLC
Applicant	R&S Construction LLC
Property Address	4760 Glacier Hwy
Legal Description	RAVENWOOD LT 1
Parcel Number	7B1001150063
Zoning	D15
Lot Size	5.1 acres, 221,678 square feet
Water/Sewer	CBJ Water/Sewer provided
Access	Glacier Highway (Collector)
Existing Land Use	Single Residence
Associated Applications	ARP20240001; ARF20250001

ALTERNATIVE ACTIONS:

1. **Amend:** require additional conditions, or delete or modify the recommended conditions.
2. **Deny:** deny the permit and adopt new findings for items 1-6 below that support the denial.
3. **Continue:** to a future meeting date if determined that additional information or analysis is needed to make a decision, or if additional testimony is warranted.

ASSEMBLY ACTION REQUIRED:

Assembly action is not required for this permit.

STANDARD OF REVIEW:

- Quasi-judicial decision
- Requires five (5) affirmative votes for approval
- Code Provisions:
 - CBJ 49.15.402
 - CBJ 49.15.411
 - CBJ 49.35
 - CBJ 49.80

The Commission shall hear and decide the case per CBJ 49.15.400(a) – Purpose and applicability. The purpose of this article is to facilitate the subdivision of land to promote the public health, safety, and general welfare of the citizens of the CBJ in accordance with the Comprehensive Plan of the City and Borough of Juneau, Alaska.

And per CBJ 49.15.402(a) - A major subdivision permit is required for subdivisions resulting in 14 or more lots.

SITE FEATURES AND ZONING



SURROUNDING ZONING AND LAND USES	
North (D15)	Single-family residential
South (D5)	Single-family residential
East (D5/D15)	Single-family & Multifamily residential
West (D15)	DNR land/Pioneer Home/ Single-Family Residential

SITE FEATURES	
Anadromous	N/A
Flood Zone	N/A
Hazard	No mapped hazard
Hillside	Yes
Wetlands	N/A
Parking District	N/A
Historic District	N/A
Overlay Districts	Mining & Exploration Surface Activities Exclusion District.

BACKGROUND INFORMATION

Project Description – Following the approval of the final plan for an Alternative Residential Subdivision (ARS) ARF2025-0001, the applicant is now presenting a subdivision plat to formally create 42 unit lots intended for single-family dwellings, along with one parent lot which encompass vegetative coverage, private right-of-way, and open space.

The unit lots are designed to accommodate individual residential structures consistent with the approved ARS plan, while the parent lot will encompass shared infrastructure and common open space as outlined in the ARS requirements. This platting action represents a key step in implementing the development vision approved by the Planning Commission and brings the project into alignment with Title 49 subdivision standards.

It should be noted that a 20-foot drainage easement has been preserved and incorporated into the subdivision.

Background –

The table below summarizes relevant history for the lot and proposed development.

Item	Summary
2025 Preliminary Plat	An Alternative Residential Subdivision (ARS) of Lot 1, Ravenwood Subdivision, for the purpose of creating a preliminary plat for the Brow Tine Subdivision, consisting of forty-two (42) unit lots and one (1) parent lot. (Attachment B)
2025 Construction Plans	90% construction plans that address grading, streets, sidewalks, water, sewer, street lighting, and drainage. Plans are being reviewed by CBJ General Engineering and zoning. Prior to final plat approval, the applicant will have constructed all required improvements or provided a financial guarantee in accordance with 49.55.412. (Attachment C)
2018 Subdivision Plat	A plat of Ravenwood Subdivision, a Lot Consolidation Subdivision of Lot 2A, Chilkat View Subdivision II and Tract 1A1, U.S. Survey No. 3246 within City and Borough of Juneau. (Attachment D)
2015 Subdivision Plat	A resubdivision plat of Lot 2A, Chilkat View Subdivision II and Tract 1A1, U.S. Survey No. 3246, a subdivision of Lot 2, Chilkat View Subdivision II and Tract 1A, U.S. Survey No. 3246 within the City and Borough of Juneau. This plat establishes a 20-foot drainage easement through Tract 1A1. (Attachment E)
2015 Subdivision Plat	A plat of Ravenswood Subdivision No. 1 a Re-subdivision of Lot 2, Chilkat View Subdivision II, Survey No. 3263 and Tract 1A, U.S. Survey No. 3246 within the City and Borough of Juneau. (Attachment F)
2014 Rezone Ordinance	Ordinance Serial No. 2014-10, An Ordinance Amending the Official Zoning Map of the City and Borough to Change the Zoning of USS 3246 Tracts 1A, 2A1 and 2A2, Located at 4660, 4664 and 4670 Glacier Highway, from D-5 to D-15. (Attachment G)
2007 Subdivision Plat	A plat denoting Tracts 1A and 2A, U.S. Survey No. 3246. A lot line adjustment to Tracts 1 and 2, U.S. survey No. 3246. (Attachment H)
2005 Subdivision Plat	Chilkat View Subdivision II, a resubdivision of lot 5 U.S.S. 3262 and Lot 2 Chilkat View Subdivision, City and Borough of Juneau. (Attachment I)
1977 Subdivision Plat	A subdivision of U.S. Survey No. 3246, Located at Vanderbilt Hill. This is the earliest subdivision on record for U.S. Survey No. 3246. (Attachment J)

ANALYSIS

Phasing – No phasing has been proposed at this time.

Minimum Lot Dimensions – The proposed lots as shown on the preliminary plat meet or exceed the dimensional standards listed in CBJ 49.25.400. This is an ARS, and per 49.15.920(c), the parent lot shall be at least 150 percent of the minimum lot size for the zoning district in which it is located. There are no minimum lot sizes for the unit-lots. The parent lot is 221,678 square feet. The unit lots vary in size between 2,917 square feet and 7,111 square feet. The CBJ 49.25.400 Dimensional Standards are listed below.

Dimensional Standard	Requirement	Met?
Minimum Lot Size	5,000 square feet.	☒ Meets/Exceeds ☐ Not met
Minimum Lot Width	50 feet	☒ Meets/Exceeds ☐ Not met

Density – Per 49.15.920(m) - Accessory dwelling units (ADU) are prohibited on the parent lot and on any unit-lots. A home occupation or a childcare home is permissible on the unit-lots. If an ARS creates a lot that complies with the D15 zoning, an ADU may be permitted unless otherwise specified.

Condition: N/A

Plat Note 1: ACCESSORY DWELLING UNITS ARE PROHIBITED ON THE PARENT LOT AND ON ANY UNIT-LOTS. IF AN ALTERNATIVE RESIDENTIAL SUBDIVISION CREATES A LOT THAT COMPLIES WITH THE TABLE OF DIMENSIONAL STANDARDS, 49.25.400, FOR THE UNDERLYING ZONING DISTRICT, THE ACCESSORY DWELLING UNIT PROHIBITION OF THIS SUBSECTION DOES NOT APPLY.

Habitat – Applicant is encouraged to contact the U.S. Fish and Wildlife for the presence of eagle nests in the area.

No anadromous waterbodies exist on Lot A, or within 50 feet.

Condition: N/A

Plat Note 2: WETLANDS MAY EXIST ON PARTS OF THIS SUBDIVISION. SPECIAL REGULATIONS MAY APPLY.

Hazard Zones – No known hazards regulated by the land use code exist on the property.

Condition: N/A

Plat Note: N/A

LOT DESIGN

Public Use Lots – No public use lots are proposed as part of this subdivision.

Condition: N/A

Plat Note: N/A

TRAFFIC

Traffic – According to CBJ 49.40.300(a)(3) a traffic impact analysis is required. However, due to the type of development, its location, and the unlikelihood of future development, the Director of Community Development has waived this requirement.

Condition: N/A

Plat Note 3: NO LOTS SHALL ACCESS DIRECTLY ON TO GLACIER HIGHWAY, A MAJOR COLLECTOR.

Use	Total ADT	Number of Dwellings	Total Trips
Single Family Detached Housing	9.52	42	399.84
Total ADTs:			399.84

ACCESS AND PUBLIC IMPROVEMENTS

Access – Per CBJ 49.35.250(a), staff has determined that the primary access to the subdivision is Mainbeam Way. The applicant has demonstrated that each lot will have direct and practical access to a public right-of-way (ROW) through the frontage of the lot, as required by CBJ 49.35.250(b).

Lot Number	Primary access
1-6	Mainbeam Way
7-14	Kicker Court
15-42	Mainbeam Way

CBJ 49.35.240 Table of Roadway Construction Standards – Per the table in 49.35.240, for an estimated Average Daily Trip (ADT) count between 212 and 499, the developer shall provide a 60-foot ROW. The preliminary plat currently shows a 50-foot ROW.

Condition 1: Prior to preliminary plat approval, the applicant has modified the plat to indicate a 60-foot ROW.

Plat Note: N/A

ADTs	TIA	Sidewalks	Travel Way Width	Streetlights	ROW Width	Paved	Publicly Maintained
399.84	No	Yes	24 feet	At all intersections	60 feet	Yes	No

Street Lighting – Per the table in 49.35.240, streetlights will be required at all intersections.

Condition: N/A

Plat Note: N/A

Pedestrian Access – Per the table in 49.35.240, sidewalks are required along one side of the street.

Condition: N/A

Plat Note: N/A

Drainage – An Engineered Drainage Report has been submitted and is being reviewed by CBJ’s General Engineering Department. (**Attachment C**)

Condition: N/A

Plat Note: N/A

Fire Code Improvements – D107.1 One- or two-family dwelling residential developments. Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with two separate and approved fire apparatus access roads.

Exceptions:

- 1.Where there are more than 30 dwelling units accessed from a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, access from two directions shall not be required.
- 2.The number of dwelling units accessed from a single fire apparatus access road shall not be increased unless fire apparatus access roads will connect with future development, as determined by the fire code official.

At the time of construction, dwellings will be required to be equipped with approved automatic sprinkler systems.

Condition: N/A

Plat Note: N/A

AGENCY REVIEW

CDD conducted an agency review comment period between May 28, 2025 – June 11, 2025. Agency review comments can be found in **Attachment K**.

Agency	Summary
Capital City Fire and Rescue	NOTE: Automatic sprinkler systems in accordance with the International Fire Code 903.3.1.1, due to single access.
CBJ Cartography	1. Show the 15’ private access easement on adjacent Lot 2 (Ravenwood). 2. Include the address of record for Misty Sea Charters & Lodging LLC in the title block (1044 Timberwolf Ln, Juneau, AK, 99801). 3. A couple typos, In the legend, revise BLANKEY to BLANKET and Note 10, revise INTIAL to INITIAL.
CBJ Zoning	1. Adjust scaling on the construction plans. 2. 24-foot travel way width required.

Agency	Summary
	3. ROW needs to be 60 feet in width.
CBJ General Engineering	Please show electrical on construction plan.
CBJ Building	No concerns at this time.
Alaska Department of Transportation	Due to the size of the development the access will need to be built as an approach road, per the Alaska Pre-construction Manual which will put its width nearer to 32-34 feet wide. That process is started, of course, by applying for a driveway and approach road permit through our E-permits webpage and permitting platform.

PUBLIC COMMENTS

CDD conducted a public comment period between June 16, 2025 – July 7, 2025. Public notice was mailed to property owners within 500 feet of the subject parcel (**Attachment L**). A public notice sign was also posted on-site two weeks prior to the scheduled hearing (**Attachment M**). Public comments were received regarding the associated ARF2025-0001, expressing concerns about the area's aesthetics and traffic conditions at the intersection of Vanderbilt Hill Road and Egan Drive. No comment was received to specifically address the plat or layout of the subdivision.

FINDINGS

Major Subdivision Preliminary Plat Approval Criteria - Per CBJ 49.15.402(c)(4), the Director makes the following findings on the proposed development:

1. Does the preliminary plat comply with CBJ 49.15.411?

Analysis: The ROW width will need to meet the 60-foot width requirement per the table in 49.35.240.

Finding: Yes. With recommended conditions, the preliminary plat complies with preliminary platting requirements listed in CBJ 49.15.411.

2. Will applicable subdivision development standards be met, or can reasonably be met with conditions?

Analysis: The applicant is required to make the improvements in accordance with T49, 49.35 and as outlined in the submitted construction plans.

Finding: Yes. With recommended conditions, all applicable subdivision development standards can be reasonably met.

3. Will the proposed subdivision provide suitable building sites for the zoning district?

Analysis: The parent lot created through this subdivision meets minimum dimensional requirements for the D15 zoning district and the unit lots provide adequate building sites T49, 49.15.900 – Alternative Residential Subdivision.

Finding: Yes. The proposed subdivision provides building sites suitable for the D15 zoning district.

4. Will the proposed street names be unique or continuations of existing streets?

Analysis: The proposed street names Mainbeam Court and Kicker Court are unique and do not appear to be continuations of any existing streets within the City and Borough of Juneau. Therefore, they meet the criteria for distinct and non-duplicative street naming.

Finding: Yes. Proposed street names are unique or are extensions of existing streets.

5. Has the director of Engineering and Public Works reviewed the application and determined that:

(i) The subdivision can be constructed to conform to applicable drainage and water quality requirements;

(ii) The streets, pioneer paths, and pedestrian ways as proposed accommodate anticipated traffic, align with, and, where appropriate, connect with streets and pedestrian ways serving adjacent properties;

(iii) Any proposed improvements conform to the requirements of this Title 49 and can be feasibly constructed; and,

(iv) Where public sewer is not required, the applicant has shown that soils are suitable for individual on-lot wastewater treatments and disposal or has shown the feasibility of alternative methods of wastewater disposal and treatment.

Analysis: No further analysis needed.

Finding: Yes. Engineering and Public Works has reviewed the proposed subdivision application and supplemental materials and believes the above criteria can be met.

RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and approve with conditions the requested preliminary plat for the Brow Tine Subdivision. This permit would allow the applicant to submit for the final plat application.

This approval is subject to the following conditions and plat notes:

Condition 1: Prior to preliminary plat approval, the applicant has modified the plat to indicate a 60-foot ROW.

Condition 2: Prior to approval of the final plat, Certification from the CBJ Treasurer is required showing that all real property taxes and special assessments levied against the property for the year of recording have been paid.

Condition 3: Prior to approval of a final plat, the applicant shall submit a complete set of construction plans for all required improvements to the Community Development Department for review by the director of Engineering & Public Works for compliance with CBJ 49.35.140.

Condition 4: Prior to approval of the final plat, the applicant has constructed all required improvements or provided a financial guarantee in accordance with CBJ 49.55.010.

Condition 5: Prior to approval of the final plat, the developer shall submit a final drainage plan to be approved by CBJ Engineering & Public Works. This drainage plan must be prepared by an Alaskan licensed engineer in accordance with CBJ 49.35.510.

Plat Note 1: ACCESSORY DWELLING UNITS ARE PROHIBITED ON THE PARENT LOT AND ON ANY UNIT-LOTS. A HOME OCCUPATION OR A CHILD CARE HOME IS PERMISSIBLE ON THE UNIT-LOTS. IF AN ALTERNATIVE RESIDENTIAL SUBDIVISION CREATES A LOT THAT COMPLIES WITH THE TABLE OF DIMENSIONAL STANDARDS, 49.25.400, FOR THE UNDERLYING ZONING DISTRICT, THE ACCESSORY DWELLING UNIT PROHIBITION OF THIS SUBSECTION DOES NOT APPLY.

Plat Note 2: WETLANDS MAY EXIST ON PARTS OF THIS SUBDIVISION. SPECIAL REGULATIONS MAY APPLY.

Plat Note 3: NO LOTS SHALL ACCESS DIRECTLY ON TO GLACIER HIGHWAY, A MAJOR COLLECTOR.

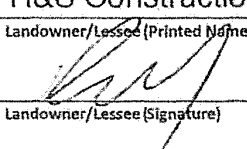
STAFF REPORT ATTACHMENTS

Item	Description
Attachment A	Application Packet SMP25-01
Attachment B	Preliminary Plat
Attachment C	SMP25-01 - Construction Plans 90%
Attachment D	2018 - Plat
Attachment E	2015 – RePlat
Attachment F	2015 – Plat
Attachment G	2014 - Rezone Ordinance 2014-10-2
Attachment H	2007 Plat
Attachment I	2005 – Plat
Attachment J	1977 - Plat
Attachment K	MEMO_SMP25-01_Subdivision-review-comments
Attachment L	SMP25-01 Abutters Notice
Attachment M	Public Notice Sign Posted



DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

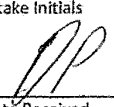
To be completed by Applicant	PROPERTY LOCATION		
	Physical Address 4670 Glacier Highway		
	Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) Ravenswood Subd		
	Parcel Number(s) 7B1001150063		
	☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____		
	LANDOWNER/ LESSEE		
	Property Owner R&S Construction LLC	Contact Person Rob Worden	
	Mailing Address PO Box 210194	Phone Number(s) 907-321-5015	
	E-mail Address roblisa@ak.net	907-723-8952	
	LANDOWNER/ LESSEE CONSENT		
Required for Planning Permits, not needed on Building/ Engineering Permits.			
Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.			
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows:			
A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission.			
B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.			
R&S Construction LLC owner Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)			
X  March 27/2025 Landowner/Lessee (Signature) Date			
Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)			
X _____ _____ Landowner/Lessee (Signature) Date			
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.			
APPLICANT			
If same as LANDOWNER, write "SAME"			
Applicant (Printed Name) same Contact Person _____			
Mailing Address _____ Phone Number(s) _____			
E-mail Address _____			
X _____ march 27/2025 Applicant's Signature Date of Application			

DEPARTMENT USE ONLY BELOW THIS LINE

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

I:\FORMS\PLANFORM\OPA_Final Draft.docx

Intake Initials 
Case Number SMP25-01
Date Received 4/28/25

Updated 6/2022-- Page 1 of 1



SUBDIVISION AND DEVELOPMENT PLAN APPLICATION

See subdivision hand-outs for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant	PROJECT SUMMARY	
	final plan review and preliminary plat review	
	Number of Existing Parcels <u>1</u>	Total Land Area <u>221,678 sq ft</u> Number of Resulting Parcels <u>43</u>
	HAS THE PARCEL BEEN CREATED BY A MINOR SUBDIVISION IN THE PRECEDING 24 MONTHS	
	☐ NO ☐ YES Case Number _____	
	TYPE OF SUBDIVISION OR PLATTING APPROVAL REQUESTED	
	<u>MINOR DEVELOPMENT</u> (changing or creating 13 or fewer lots)	<u>MAJOR DEVELOPMENT</u> (changing or creating 14 or more lots)
	☐ Preliminary Plat (MIP) ☐ Final Plat (MIF) ☐ Panhandle Subdivision ☐ Accretion Survey ☐ Boundary Adjustment ☐ Lot Consolidation (SLC) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____	☒ Preliminary Plat (SMP) ☐ Final Plat (SMF) ☐ Preliminary Development Plan – PUD (PDP) ☐ Final Development Plan – PUD (PDF) Preliminary ☐ Development Plan – ARS (ARP) Final ☐ Development Plan – ARS (ARF) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____
	ALL REQUIRED DOCUMENTS ATTACHED	
	☒ Pre-application conference notes ☒ Narrative including: ☒ Legal description(s) of property to be subdivided ☒ Existing structures on the land ☒ Zoning district ☒ Density ☒ Access ☒ Current and proposed use of any structures ☒ Utilities available ☒ Unique characteristics of the land or structure(s)	
	☒ Preliminary Plat checklist	

DEPARTMENT USE ONLY BELOW THIS LINE

SUBDIVISION/PLATTING FEES	Fees	Check No.	Receipt	Date
Application Fees	\$ <u>110.00</u>	<u>43</u>		
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Total Fee	\$ <u>41880.00</u>			

For assistance filling out this form, contact the Permit Center at 586-0770.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

I:\FORMS\PLANFORM\Subdivision Application.docx

Case Number	Date Received
<u>SMP25-01</u>	<u>4/26/25</u>

Revised October 2019 - Page 1 of 1



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DRAINAGE REPORT Vector Engineering Inc.

To: City of Juneau Community Development
From: Tracy Moore, PE
Date: February 25, 2025
Re: Ravenswood Subdivision

1.0 Site Overview

The site is located at 4670 Glacier HWY and consists of approximately 5.09 acres of mostly cleared and undeveloped land. The Ravenswood Subdivision is a resubdivision of Lot 2, Chilkat View Sub. II, Survey No. 3263 & Tract 1A, U.S. Survey No. 3246.

There is an existing creek that has been rerouted at the southern end of the site. This creek crosses Glacier Highway through a 30" CMP culvert. An existing 24" CMP culvert crosses Glacier Highway at the north of the project, which is where the proposed site drainage will be released.

The proposed development consists of 43 lots, with 42 residential lots and one parent lot (Lot 43) to be owned in common by a homeowners' association.

2.0 Increase in Stormwater Runoff

Drainage calculations have been performed to estimate pre- and post-development flows in accordance with the City and Borough of Juneau Manual of Stormwater Management Practices. The resulting increase in runoff flows in cubic feet per second (CFS) are summarized in Table 1 below:

Table 1 – Stormwater Runoff Summary

Discharge Point	Pre-Development Flow (CFS)*	Post-Development Flow (CFS)*	Increase in Runoff (CFS)*	Discharge Culvert Capacity (CFS)
24" CMP	2.32	11.33	9.01	29.97
SD-1 (Driveway)	N/A	N/A	N/A	11.97

*Results are based on an assumed precipitation intensity(i) = 3.04 inches/hour for a 5-min duration and a 25-year storm event.



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3.0 Connections to Established Channels

The proposed drainage system consists of drainage swales along both sides of the proposed subdivision street. These swales will collect runoff from all proposed hard surfaces including roads, sidewalks, driveways, and roofs. The system will include 12" or 18" culverts under all 42 driveways, most driveways will be shared in order to reduce the number of required culverts. All collected runoff will be conveyed through the ditch system and eventually discharge to the existing 24" CMP culvert crossing Glacier Highway at the north end of the site.

4.0 Evaluation of Downstream Drainage Ways

The Glacier Highway 24" CMP cross-culvert that will receive the increased flow has been evaluated and found to have adequate capacity for the additional demand (see Table 1 above). The culvert capacity of 29.97 CFS exceeds the post-development flow of 11.33 CFS, providing a safety factor of approximately 2.64.

The proposed worst-case driveway culvert (SD-1) with a capacity of 11.97 CFS will be adequate to handle the anticipated flows. Upstream culverts will be analyzed and sized (either 12" or 18") appropriately once final layout has been approved and established.

5.0 Summary of Required Improvements

Following is a summary of the approach to CBJ code requirements for the drainage plan:

a) Plan Requirements

- 1) Increase in Runoff: See Table 1 above
- 2) Evaluation of Existing Drainage Ways: See section 4.0 and Table 1 above
- 3) Public and any required drainage facilities:
 - Drainage swales along both sides of the proposed subdivision street
 - 18" or 12" culverts under all driveways
 - Connection to existing 24" CMP culvert at Glacier Highway
- 4) Outlet to Established Drainage: The drainage system will outlet to the existing 24" CMP culvert crossing Glacier Highway

b) Easements: The preliminary plat shows existing drainage easements (20' drainage easement as per Plat No. 99-52). Additional easements may be needed depending on final site topography and building locations.

c) Drainage Systems Required: The proposed drainage system includes swales, culverts, and connections to the existing infrastructure as described above.

d) Construction timing: There will be no phasing on this project and construction is planned to begin in 2025.



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6.0 Drainage Summary

The downstream drainage ways have been evaluated for the impact of the proposed improvements and found to be adequate to handle the increase in runoff. The existing 24" CMP culvert crossing Glacier Highway has sufficient capacity (29.97 CFS) to accommodate the post-development flow (11.33 CFS) from a 25-year storm event.

The proposed system of swales and culverts will effectively manage stormwater runoff from the development and direct it to the established drainage channel (24" CMP culvert). This approach satisfies the requirements of the City and Borough of Juneau for stormwater management.

Appendix: Drainage Calculations

Pipe Capacity Calculations

Using the Manning's Equation from the Civil Engineering Reference Manual for the PE Exam:

$$Q = (1.49/n) A (R^{2/3}) (S^{1/2})$$

Where:

- Q = Flow rate in CFS (ft³/s)
- V = Velocity in ft/s
- n = Manning Coefficient
- R = Hydraulic Radius (A/P or D/4 for full pipe conditions)
- A = Cross-section area of the flow ($\pi * (D^2) / 4$ for full pipe)
- P = Wetted perimeter of the flow ($\pi * D$ for full pipe)
- D = Diameter (ft)
- S = Slope of pipe

Culvert	Q (CFS)	n	D (ft)	R	A	P	S	Description
SD-1	11.97	0.022	1.5	0.38	1.77	4.71	0.037	Worst case driveway culvert
24" CMP	29.97	0.022	2	0.50	3.14	6.28	0.05	Glacier HWY crossing

Peak Flow Calculations

Using the Rational Method per City and Borough of Juneau Stormwater Manual:

$$Q = C \times i \times A$$

Where:

- Q = Peak flow in CFS
- C = Estimated runoff coefficient
- i = Rainfall intensity (in/hr)

Ravenswood Subdivision
Juneau, AK

Stormwater Report

VEI Job # 2024-Raven
2025



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- A = Drainage area (acres)

*For a $T_c = 5$ min with a 25-year return period, $i = 3.04$ in/hour per NOAA Precipitation Table

Developed Site Areas	Size (acre)	C
Driveways	0.3857	0.90
Roofs	1.3884	0.90
Road/Sidewalk	2.0000	0.90
Lawn	1.3159	0.25
Total	5.09	-

Pre-Development	Size (acre)	C
Light Forest	5.09	0.15

Discharge Point	Capacity (CFS)	Flow Condition	Q (CFS)	I (in/hr)	C	Area (acre)
SD-1	11.97	Existing	2.32	3.04	0.15	5.09
		Proposed	11.33	3.04	0.73	5.09
24" CMP	29.97	Existing	2.32	3.04	0.15	5.09
		Proposed	11.33	3.04	0.73	5.09

7.0 Erosion Control

In compliance with the requirements of the Alternate Residential Subdivision (ARS), the proposed development incorporates a parent lot encompassing the perimeter of the site, held in shared ownership by members of the homeowners association. This parent lot provides 22,044 square feet (0.5 acres) of predominantly green space, offering shared recreational and environmental benefits to residents.

The inclusion of this green space serves a critical role in stormwater management by promoting natural infiltration, reducing surface runoff volume, and enhancing on-site water quality treatment. Additionally, the drainage plan integrates multiple Best Management Practices (BMPs) to mitigate runoff impacts. These BMPs are strategically designed to treat contaminants at their source, control erosion, and minimize pollutant discharge to the surrounding environment. By incorporating these measures, the development enhances both water quality and site sustainability, aligning with regulatory and environmental objectives.



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Maintenance of Roadside Ditches

Roadside ditches play a crucial role in managing stormwater by conveying runoff away from roadways and developed areas while promoting infiltration and sediment capture. Proper maintenance ensures these ditches remain free of obstructions, minimizing the risk of localized flooding and erosion. Implementation includes regular inspection and removal of accumulated debris, sediment, and vegetation that may impede flow. Additionally, stabilizing ditch banks with appropriate vegetation or erosion control materials helps prevent scouring and sediment transport downstream.

Maintenance and Repair of Vehicles and Equipment

The maintenance and repair of construction and operational vehicles can introduce pollutants such as oil, grease, heavy metals, and other hazardous fluids into the environment if not properly managed. To minimize stormwater contamination, all maintenance and repair activities should be conducted in designated areas equipped with spill containment measures, absorbent materials, and proper waste disposal facilities. Routine inspections for leaks and prompt cleanup of spills further reduce pollutant discharge, ensuring compliance with environmental regulations.

Landscaping and Lawn/Vegetation Management

Proper landscaping and vegetation management are essential for stabilizing soil, reducing erosion, and enhancing stormwater infiltration. Implementation includes using native and drought-resistant plant species, limiting the application of fertilizers and pesticides, and maintaining vegetative cover in high-risk erosion areas. Additionally, regular mowing, pruning, and removal of invasive species help sustain a healthy vegetative buffer that supports stormwater filtration while maintaining site aesthetics and functionality.

Biofiltration Swale

A biofiltration swale is a vegetated, gently sloped channel designed to slow, filter, and infiltrate stormwater runoff while removing pollutants through natural processes. Implementation involves constructing swales with well-draining soils, selecting deep-rooted vegetation that enhances filtration, and ensuring proper grading to maintain adequate flow velocity for treatment without causing erosion. Routine maintenance, including sediment removal, replanting, and clearing blockages, ensures continued effectiveness in reducing sediment, nutrients, and other contaminants before stormwater is discharged into natural water bodies.



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Certification:

"I hereby state that this Drainage Report for the Ravenswood Subdivision has been prepared by me, or under my supervision, and meets the requirements of the City of Juneau Municipal Code and the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that City of Juneau does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me."

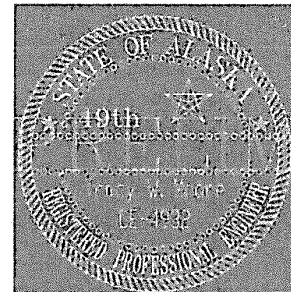
A rectangular box containing a handwritten signature in cursive script that reads "Tracy Moore".

Signature

Date

Tracy Moore, P.E.
Vector Engineering, Inc.
2724 Black Lake Blvd, Ste 202
Tumwater, WA 98512
(360) 352-2477

Seal:



03/28/2025

Mannings Equation from 19-4 of the Civil Engineering Reference Manual for the PE Exam

$$Q = \frac{1.49}{n} AR^{2/3} S_o^{1/2}$$

Where,

- Q = Flow rate in CFS (ft³/s)
- V = Velocity in ft/s
- n = Manning Coefficient per App. 19. A
- R = Hydraulic Radius (A/P or D/4 for full pipe conditions)
- A = Cross-section area of the flow ($\pi * (D^2) / 4$ for full pipe)
- P = Wetted perimeter of the flow ($\pi * D$ for full pipe)
- D = Diameter (ft)
- S = Slope of pipe

Culvert	Q (CFS)	n	D (ft)	R	A	P	S	Description
SD-1	11.97	0.022	1.5	0.38	1.77	4.71	0.037	Worst case driveway culvert
24" CMP	29.97	0.022	2	0.50	3.14	6.28	0.05	Glacier HWY crossing

Peak Runoff from the Rational Method per City and Borough of Juneau Stormwater Manual

$$Q = CIA$$

Where,

Q =	Peak flow in CFS
C =	Estimated runoff coefficient per Table D-4
i =	Rainfall intensity (in/hr) - per NOAA data
A =	Drainage area (acres)

*Tc = 5 min with a 25-year retrain period yields i=3.04 in/hour per NOAA Precip Table

Capacity (CFS)	Discharge Point	Q (CFS)	i (in/hr)	C	Area (acre)	Description
11.97	SD-1					
	Existing	2.32	3.04	0.15	5.09	
	Proposed	11.33		0.73	5.09	
29.97	24" CMP					
	Existing	2.32	3.04	0.15	5.09	
	Proposed	11.33		0.73	5.09	

Developed Site Areas		
Site Area	Size (acre)	C
Driveways	0.3857	0.90
Roofs	1.3884	0.9
Road/Sidewalk	2	0.9
Lawn	1.3159	0.25
Total	5.09 acre	

Developed Site Areas		
Site Area	Size (acre)	C
Light Forest	5.09	0.15

PRECIPITATION FREQUENCY ESTIMATES

by duration for ARI (years):	1	2	5	10	25	50	100
5-min:	0.131	0.153	0.187	0.215	0.253	0.282	0.312
10-min:	0.176	0.206	0.251	0.288	0.339	0.379	0.418
15-min:	0.206	0.241	0.293	0.337	0.397	0.443	0.49
30-min:	0.273	0.32	0.389	0.447	0.527	0.588	0.65
60-min:	0.374	0.438	0.533	0.613	0.722	0.806	0.89
2-hr:	0.552	0.647	0.789	0.906	1.07	1.19	1.32
3-hr:	0.729	0.854	1.04	1.2	1.41	1.57	1.73
6-hr:	1.17	1.37	1.67	1.92	2.26	2.52	2.78
12-hr:	1.76	2.06	2.5	2.87	3.38	3.79	4.21
24-hr:	2.54	2.97	3.59	4.1	4.82	5.41	6.04
2-day:	3.45	4.01	4.79	5.42	6.29	7	7.74
3-day:	4.1	4.73	5.61	6.3	7.26	8.03	8.82
4-day:	4.62	5.32	6.28	7.03	8.07	8.88	9.73
7-day:	5.98	6.84	8.02	8.94	10.2	11.2	12.2
10-day:	7.07	8.07	9.44	10.5	12	13.1	14.3
20-day:	10.6	12.1	14.1	15.6	17.6	19.2	20.7
30-day:	14	15.9	18.5	20.4	22.9	24.9	26.8
45-day:	18.5	21.1	24.5	27	30.1	32.5	34.8
60-day:	22.1	25.4	29.5	32.3	35.9	38.4	40.8

200	500	1000
0.35	0.4	0.438
0.47	0.537	0.588
0.549	0.629	0.689
0.729	0.834	0.914
0.999	1.14	1.25
1.48	1.69	1.85
1.95	2.23	2.44
3.13	3.58	3.92
4.73	5.42	5.94
6.78	7.76	8.5
8.59	9.72	10.6
9.72	10.9	11.8
10.7	11.9	12.9
13.4	15	16.1
15.6	17.4	18.7
22.4	24.7	26.4
28.8	31.5	33.5
37.1	40.1	42.4
43	45.8	48

Water Quality Source Control
Site- and Activity-Specific BMPs

Maintenance of Roadside Ditches

Description of Pollutant Sources

Common road debris including eroded soil, oils, vegetative particles and heavy metals can be a source of stormwater pollutants.

Pollutant Control Approach

Roadside ditches should be maintained to preserve the condition and capacity for which they were originally constructed, and to minimize bare or thinly vegetated ground surfaces. Maintenance practices should provide for erosion and sediment control.

Operational BMPs for Maintenance of Roadside Ditches

The following BMPs apply to all activities pertaining to roadside ditches:

- Inspect roadside ditches regularly to identify sediment accumulations and localized erosion.
- Ditches should be kept free of trash and debris. Maintain on a regular basis.
- Do not plow snow or ice into ditches.
- Vegetation in ditches prevents erosion and cleanses runoff waters. Remove vegetation only when flow is blocked or excess sediments have accumulated. Conduct ditch maintenance (seeding, fertilizer application, harvesting) in May or June, where possible. This allows vegetative cover to be re-established by the next wet season, thereby minimizing erosion of the ditch as well as making the ditch effective as a biofilter. See Appendix E “Grasses” for appropriate grass species.
- In the area between the edge of the pavement and the bottom of the ditch, commonly known as the “bare earth zone,” use grass wherever possible. Vegetation should be established from the edge of the pavement if possible, or at least from the top of the slope of the ditch.
- Reseed with the following seed mix:
 - Red or tall fescue – 60 to 70%
 - Annual rye grass – 15 to 20%
 - Bering Hairgrass – 15 to 20%
- Ditch cleanings are not to be left on roadway surfaces. Sweep dirt and debris remaining on the pavement at the completion of ditch cleaning operations.
- Roadside ditch cleanings not contaminated by spills or other releases may be screened to remove litter and separated into soil and vegetative matter (leaves, grass, branches, needles, etc.). The soil fraction may be handled as “clean soils” and the vegetative matter can be composted or disposed of in a municipal waste landfill.
- Roadside ditch cleanings contaminated by spills or other releases known or suspected to contain dangerous waste must be handled following state and federal regulations unless testing determines it is not dangerous waste. See Street Sweeping and Disposal of Street Wastes BMP.

... *B. WATER QUALITY SOURCE CONTROL BMPs*

- Examine culverts on a regular basis for scour or sedimentation at the inlet and outlet, and repair as necessary. Give priority to culverts conveying perennial or salmon-bearing streams and culverts near streams in areas of high sediment load, such as those near subdivisions during construction.
- Install biofiltration swales and filter strips to treat roadside runoff wherever practical and use engineered topsoils wherever necessary to maintain adequate vegetation. These systems can improve stormwater pollutant control upstream of roadside ditches.

Water Quality Source Control
Site- and Activity-Specific BMPs

Maintenance and Repair of Vehicles and Equipment

Description of Pollutant Sources

Pollutant sources include parts/vehicle cleaning, spills/leaks of fuel and other liquids, replacement of liquids, outdoor storage of batteries/liquids/parts, and vehicle parking.

Pollutant Control Approach

Good control of leaks and spills of fluids using good housekeeping, and cover and containment BMPs.

Operational BMPs for Maintenance and Repair of Vehicles and Equipment

The following BMPs apply to all activities pertaining to maintenance and repair of vehicles and equipment:

- Inspect for leaks all incoming vehicles, parts and equipment stored temporarily outside.
- Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid-containing parts of removal or transfer of liquids.
- Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store cracked batteries in a covered non-leaking secondary equipment system.
- Empty oil and fuel filters before disposal of waste oil and fuel.
- Do not pour/convey washwater, liquid waste, or other pollutants into storm drains or to surface water. Check with the local sanitary sewer authority for approval to convey to a sanitary sewer.
- Do not connect maintenance and repair shop floor drains to storm drains or to surface water. To allow for snowmelt during the winter, a drainage trench with a sump for particulate collection can be installed and used only for draining the snowmelt and not for discharging any vehicular or shop pollutants.
- Dispose of hazardous wastes appropriately i.e. CBJ hazardous wastes clean up days.

The following BMPs are optional unless the above minimum BMPs fail to provide adequate source control:

- Consider storing damaged vehicles inside a building or other covered containment until all liquids are removed. Remove liquids from vehicles retired for scrap.
- Clean parts with aqueous detergent based solutions or non-chlorinated solvents such as kerosene or high flash mineral spirits, and/or use wire brushing or sand blasting whenever practicable. Avoid using toxic liquid cleaners such as methylene chloride, 1,1,1-trichloroethane, trichloroethylene or similar chlorinated solvents. Choose cleaning agents that can be recycled.
- Inspect all BMPs regularly, particularly after a significant storm. Identify and correct deficiencies to ensure that the BMPs are functioning as intended.
- Avoid hosing down work areas. Use dry methods for cleaning leaked fluids.

- Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, transmission fluids, and engine oils.
- Do not mix dissimilar or incompatible waste liquids stored for recycling.

Structural Source Control BMPs

- Conduct all maintenance and repair of vehicles and equipment in a building or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated stormwater.
- The maintenance of refrigeration engines in refrigerated trailers may be conducted in a parking area with due caution to avoid the release of engine or refrigeration fluids to storm drains or surface waters.
- Park large mobile equipment, such as log stackers, in a designated contained area.

Treatment

Contaminated stormwater runoff from vehicle staging and maintenance areas must be conveyed to a sanitary sewer, if allowed by the local sewer authority, or to an oil-water separator, applicable filter, or other equivalent oil treatment system.

Water Quality Source Control

Site- and Activity-Specific BMPs

Landscaping and Lawn/Vegetation Management

Description of Pollutant Sources

This activity encompasses all aspects of landscaping and vegetation management, from small-scale yard maintenance to large-scale commercial landscaping businesses and vegetation management programs. It includes vegetation removal, pesticide and herbicide application, fertilizer application, watering, clearing, grading, and other practices. These may contaminate stormwater runoff with the following pollutants: pesticides and other toxic organic compounds; metals, such as arsenic, cadmium, chromium, copper, lead and zinc; oils; suspended solids; and coliform bacteria.

Note: The term pesticide includes insecticides, herbicides, fungicides, etc.

Fertilizer runoff adds nutrients to water, causing excessive plant and algae growth. When too much growth occurs, the dead and/or dying plant material in the water can take the oxygen out of the water and suffocate all other life in the water.

Pollutant Control Approach

- Control fertilizer and pesticide applications, soil erosion, and site debris to prevent contamination of stormwater.
- Consider using the Integrated Pest Management (IPM) approach for pest control, and use pesticides only as a last resort. IPM is an effective pest management approach that uses an array of methods to manage pest damage with the least possible hazard to people and the environment. Using IPM practices can significantly reduce or eliminate the needs for pesticides.

Note: Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

Operational BMPs for Landscaping

The following BMPs or equivalent measures, methods or practices apply to landscaping activities:

- Use native species when appropriate.
- Install engineered soil/landscape systems to improve infiltration and the regulation of stormwater in landscaped areas.
- Do not dispose of collected vegetation into waterways or storm drainage systems.
- Conduct mulch-mowing whenever possible or dispose of grass clippings, leaves, sticks, or other collective vegetation by composting, if feasible.
- Use mulch or other erosion control measures when soils are exposed for more than one week during the dry season or two days during the rainy season.
- If oil or other chemicals are handled, store and maintain appropriate oil and chemical spill cleanup materials in readily accessible locations. Ensure that employees are familiar with proper spill cleanup procedures.

Note: Installing an amended soil/landscape system can preserve both the plant system and the soil system more effectively. This type of approach provides a soil/landscape system with adequate depth, permeability, and organic matter to sustain itself and continue working as an effective stormwater infiltration system and a nutrient cycle.

- Till fertilizers into the soil rather than dumping or broadcasting onto the surface. Determine the proper fertilizer application for the types of soil and vegetation encountered.
- Till a topsoil mix or composted organic material into the soil to create a well-mixed transition layer that encourages plant establishment.
- Use manual and/or mechanical methods of vegetation removal rather than applying herbicides, where practical.

Operational BMPs for the Use of Pesticides

The following BMPs apply to activities involving pesticide use:

- Develop and implement an IPM and use pesticides only as a last resort.
- Implement a pesticide-use plan and include at a minimum: a list of selected pesticides and their uses; brands, formulations, application methods, and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods; and monitoring, record keeping, and public notice procedures.
- Choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment or have properties that strongly bind it to the soil. Any pest control used should be conducted at the life stage when the pest is most vulnerable. For example, if it is necessary to use a *Bacillus thuringiensis* application to control tent caterpillars, it must be applied before the caterpillars cocoon or it will be ineffective. Any method used should be site-specific and not used wholesale over a wide area.
- Apply the pesticide according to label directions. Under no conditions shall pesticides be applied in quantities that exceed manufacturer's instructions.
- Mix the pesticides and clean the application equipment in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.
- Store pesticides in enclosed areas or in covered impervious containment. Ensure that pesticide contaminated stormwater or spills/leaks of pesticides are not discharged into storm drains. Do not hose down the paved areas to a storm drain or conveyance ditch. Store and maintain appropriate spill cleanup materials in a location known to all near the storage area.
- Clean up any spilled pesticides and ensure that the pesticide-contaminated waste materials are kept in designated covered and contained areas.
- The pesticide application equipment must be capable of immediate shutoff in the event of an emergency.
- Do not spray pesticides within 100 feet of open waters including wetlands, ponds, and streams, sloughs and any drainage ditch or channel that leads to open water except when approved by the local jurisdiction. All sensitive areas including wells, creeks, and wetlands must be flagged prior to spraying.
- As required by the local government, complete public posting of the area to be sprayed prior to the application.
- Spray applications should only be conducted during weather conditions as specified in the label direction and applicable local and state regulation. Do not apply during rain or immediately before expected rain.

The following BMPs are optional unless the previous BMPs fail to provide adequate source control:

- Consider alternatives to the use of pesticides such as covering or harvesting weeds, substitute vegetative growth, and manual weed control/moss removal.
- Once a pesticide is applied, its effectiveness should be evaluated for possible improvement. Records should be kept showing the applicability and inapplicability of the pesticides considered.
- An annual evaluation procedure should be developed including a review of the effectiveness of pesticide applications, impact on buffers and sensitive areas (including potable wells), public concerns, and recent toxicological information on pesticides used/proposed for use.
- Rinse liquid from equipment cleaning and/or triple-rinsing of pesticide containers should be used as products, recycled into product or disposed of properly.
- Consider the use of soil amendments, such as compost, that are known to control some common diseases in plants. The following are three possible mechanisms for disease control by compost addition (U.S. EPA Publication 530-F-9-044):
 - Successful competition for nutrients by antibiotic production;
 - Successful predation against pathogens by beneficial microorganisms;
 - Activation of disease-resistant genes in plants by composts.

Operational BMPs for Lawn/Vegetation Management

The following BMPs apply to all lawn/vegetation management activities:

- Use at least a 3-inch topsoil layer with at least 8 percent organic matter to provide a sufficient vegetation-growing medium. Amending existing landscapes and turf systems by increasing the percent organic matter and depth of topsoil can substantially improve the permeability of the soil and the disease-resistance of the vegetation, and reduce fertilizer, herbicide, and pesticide demand. Organic matter is the least water-soluble form of nutrient that can be added to the soil. Composted organic matter generally releases only about 2 to 10 percent of its total nitrogen annually, and this release corresponds closely to the plant growth cycle. If natural plant debris and mulch are returned to the soil, this system can continue recycling nutrients indefinitely.
- Select the appropriate turfgrass mixture for the climate and soil type.
- Selection of desired plant species can be made by adjusting the soil properties of the subject site. Consult a soil restoration specialist for site-specific conditions.
- Aerate lawns regularly in areas of heavy use where the soil tends to become compacted. Aeration should be conducted while grasses in the lawn are growing most vigorously. Remove layers of thatch greater than ¾-inch deep.
- Mowing is a stress-creating activity for turf grass. When grass is mowed too short, its productivity is decreased and there is less growth of roots and rhizomes. The turf becomes less tolerant of environmental stresses and more disease prone and reliant on outside means such as pesticides and fertilizers to remain healthy. Set the mowing height at the highest acceptable level and mow at times and intervals designed to minimize stress on the turf. Generally, mowing only 1/3 of the grass blade height will prevent stressing the turf.
- Fertilizer management:
 - Turfgrass is most responsive to nitrogen fertilization, followed by potassium and phosphorus. Fertilization needs vary by site, depending on plant, soil and climate

conditions. Evaluation of soil nutrient levels through regular testing ensures the best possible efficiency and economy of fertilization.

- Fertilizers should be applied in amounts appropriate for the target vegetation and at the time of year that minimizes losses to surface and ground waters. Do not fertilize when the soil is dry. Alternatively, do not apply fertilizers within three days prior to predicted rainfall. The longer the period between fertilizer application and rainfall, the less fertilizer runoff occurs.
- Use slow release fertilizers such as methylene urea, IDBU, or resin-coated fertilizers when appropriate, generally in the spring. Non-synthetic fertilizers are encouraged. Use of slow release fertilizers is especially important in areas with sandy or gravelly soils.
- Time the fertilizer application to periods of maximum uptake. Generally fall and spring applications are recommended.
- Properly trained persons should apply all fertilizers. At commercial and industrial facilities, fertilizers should not be applied to bioswales, filter strips or buffer areas that drain to sensitive water bodies unless approved by the local jurisdiction.

The following BMPs are optional unless previous BMPs fail to provide adequate source control:

- Integrated Pest Management is the most effective BMP measure that can be taken for herbicide, insecticide, and fungicide use. An IPM program might consist of the following steps:

Step 1: Correctly identify pests and understand their lifecycle.

Step 2: Establish tolerance thresholds for pests.

Step 3: Monitor to detect and prevent pest problems.

Step 4: Modify the maintenance program to promote healthy plants and discourage pests.

Step 5: Use cultural, physical, mechanical or biological controls first if pests exceed the tolerance thresholds.

Step 6: Evaluate and record the effectiveness of the control and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.

- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface. Determine the proper fertilizer application for the types of soil and vegetation involved. Soil should be tested for the correct fertilizer usage.
- Use mechanical methods of vegetation removal rather than applying herbicides.
- An effective measure that can be taken to reduce pesticide use, excessive watering, and removal of dead vegetation involves careful soil mixing and layering prior to planting. A topsoil mix or composted organic material should be rototilled into the soil to create a transition layer that encourages plant establishment and water retention. This practice can improve the health of planted vegetation, resulting in better disease resistance.
- Use native plants in landscaping. Native plants do not require extensive fertilizer or pesticide applications

Water Quality Treatment Basic Treatment BMPs

Biofiltration Swale

Description

Biofiltration swales are open, gently sloped vegetated channels that convey water and also provide treatment. They function by slowing water velocity, allowing sediment to deposit and by filtering water through vegetation and swale substrate material. Swales that dry out between rain events are “basic swales” and should be planted with mixed grasses or other species; swales that remain wet most of the time are “wet swales” and should be planted with wetland vegetation. Wetland vegetation of wet swales must be protected from high flow, therefore wet swales must be designed as an off-line facility.



Application

Biofiltration swales are good to use in combination with end-of-pipe treatment like constructed wetlands or sediment basins and are appropriate along streets, parking lots and perimeters of building sites.

Design

Design Criteria

Design criteria for biofiltration swales are as follows:

- Water quality flow rate (swales are typically designed as on-line): See Appendix D
- Flow depth: 1 to 4 inches
- Flow velocity: 1 ft/s maximum for treatment, 3 ft/s maximum for 100-year event
- Hydraulic residence time for water: 9 minutes minimum
- Freeboard height: 6” minimum
- Longitudinal slope:
 - Basic swales: 1% to 3% or up to 6% with check dams
 - Wet swales: 2% maximum. Use steps, gabion walls, or check dams to reduce slope
- Water inlets (from most preferred to acceptable):
 - Sheet flow from street
 - Multiple dispersed inlets (curb cuts)
 - Single inlet (armored)
- Water table level:

- Basic swales: water table must be minimum 2 feet below bottom of swale; site can be over-excavated in areas with impermeable or clay soils
- Wet swales: no restrictions or need for underdrain; not appropriate for areas of highly infiltrative (gravelly, cobbly) soils
- Topsoil:
 - Permit infiltration but not be highly erosive: preferred sandy loam, loamy sand, loam soils
 - Composition: sand 35-60%, clay 10-25%, silt 30-55%, organics 20% (no animal waste)
 - Do not apply fertilizers, pesticides, or insecticides
- Vegetation:
 - Vegetation must be selected to accommodate expected high flow velocities
 - Vegetation must be established before introducing high flows (approximately 6 months)
 - Basic swales:
 - Vegetation and Seed mix: See vegetation recommendations below and Appendix E
 - Seed rate: 200 lbs per acre
 - Wet swales:
 - Vegetation: See vegetation recommendations below and Appendix E
 - Cover: use a combination of plugs, perennial seed, and annual seed to establish 100% cover in first year.
- The required setback is 2 feet from property lines, 10 feet from building foundations, and 50 feet from wetlands, rivers, streams and creeks, unless approved by the CBJ.

Design Procedure

The following is the procedure to be followed to design biofiltration swales:

1. Identify swale type (basic or wetland)
2. Determine water quality design flow rate. Basic swales can be designed as either on-line or off-line facilities. Wet swales may be more appropriate as off-line facilities. (see Appendix D)
3. Establish longitudinal slope of swale and swale bottom width. Swales with longitudinal slopes less than 1% must be designed as wet swales.
4. Use Manning's equation to calculate flow depth and find flow cross sectional area. Assume a Manning's coefficient of 0.2 – 0.35 (approx 0.24 if mowed infrequently)
5. Compute flow velocity at design flow rate ($V = Q/A$, Q =design flow rate, A =cross sectional area of flow in swale)
6. Iteratively calculate channel length necessary to achieve hydraulic residence time of 9 minutes maximum ($L = 60Vt$, V = flow velocity, t = residence time of 9 minutes, 60 for conversion of seconds to minutes). If the stormwater does not enter at a single location, hydraulic residence time is calculated as the flow-weighted average.
7. If required length is not available on site, adjust slope and width of swale design.
8. Select vegetation appropriate to swale type.

- Check dams 12-15 inches tall constructed of riprap for longitudinal swale slopes greater than 3%.
- Underdrains of Schedule 40 PVC perforated pipe, 6-inch diameter. Underdrains are required for basic swales with longitudinal slopes less than 1.5% or where poorly infiltrating soils will result in saturated soil conditions. Note: underdrain must infiltrate or drain freely to an acceptable discharge point.

Figure C-1 shows typical cross-sections for a biofiltration swale.

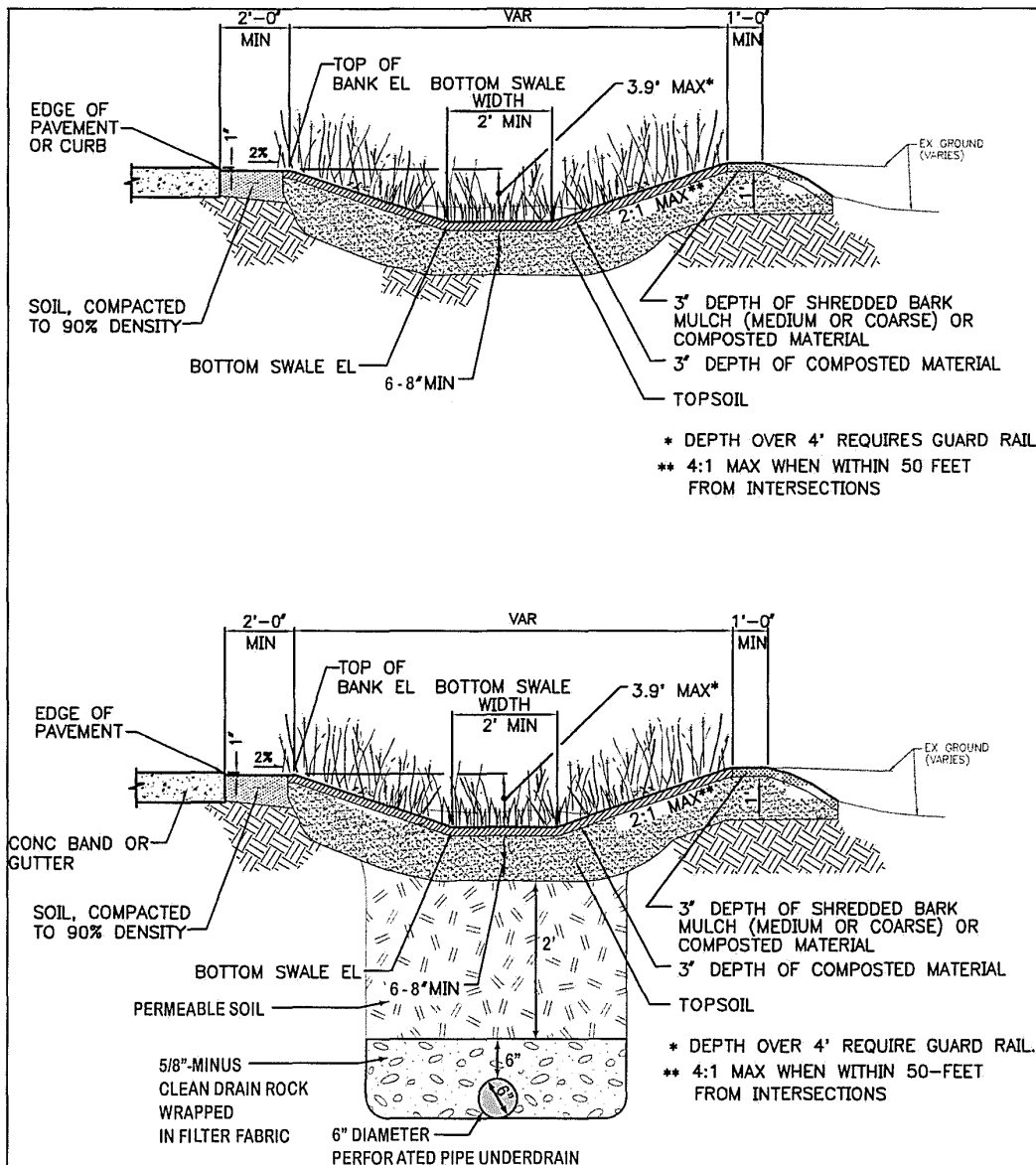


Figure C-1. Biofiltration Swale Sections

Vegetation Recommendations

The following recommendations for vegetation should be followed in design of biofiltration swales (see Appendix E for recommended plant list):

- Consider sun/shade conditions for adequate growth
- Grass swale seed mix:
 - Red or tall fescue – 60 to 70%
 - Annual rye grass – 15 to 20%
 - Bering Hairgrass – 15 to 20%
- Wetland plants:
 - Rush – 4” spacing on center
 - Bulrush – 6” to 12” spacing on center
 - Sedge – 6” spacing on center

Maintenance

Maintenance requirements for biofiltration swales are as follows:

- Inspect twice per year for debris and sediment that prevents flow or restricts plant growth
- Grass swale:
 - Mow grass twice per year and remove grass clippings.
 - Perform inspections and maintenance as outlined in Table C-2.
- Wet swale:
 - Do not mow.
 - Perform inspections and maintenance outlined in Table C-2.

P/L

2' MIN

2H:1V

2'

2H:1V

ON-SITE DRAINAGE DITCH NOTES:

- ALL DITCHES SHALL BE STABILIZED WITH VEGETATION OR SHOT ROCK.
- THE TOP OF DITCH SHALL BE A MINIMUM OF 2 FEET AWAY FROM ANY PROPERTY LINES.

SHEET NOTES:

- LAYOUT SHOWN IS PRELIMINARY. THE CORRESPONDING DRAINAGE REPORT HAS ASSUMED THE ENTIRE 3.16 ACRES WILL BE COVERED IN HARD SURFACES (ASPHALT, ROOFS, ETC.). THE FINAL SITE LAYOUT MAY DIFFER FROM WHAT IS SHOWN, BUT AS LONG AS IT REMAINS WITHIN THE DEVELOPMENT FOOTPRINT SHOWN, AND CONSTRUCTS THE ON-SITE CONVEYANCE FEATURES SHOWN, NO FURTHER DRAINAGE ANALYSIS IS NEEDED. ADDITIONAL ON-SITE DRAINAGE FEATURES MAY BE INSTALLED, BUT ALL STORMWATER SHALL LEAVE THE SITE AT DISCHARGE POINT "A".
- EXISTING GROUND CONTOURS SHOWN ARE FROM CBJ'S 2014 LIDAR DATA.

APPLICANT INFO
APPLICANT: RH DEVELOPMENT, LLC
MAILING ADDRESS: PO BOX 32403, JUNEAU, AK 99803
PHONE NUMBER: 907-723-4791

SITE INFO
SITE ADDRESS: NHN GLACIER HWY
PARCEL NUMBER: 4B2201060050
LEGAL DESCRIPTION: USS 2386 LT G TR 2

USS 3817 LOT 1A

DRAINAGE DITCH AROUND PERIMETER OF SITE (SEE DETAIL, THIS SHEET)

RETAINED VEGETATION (TYP)

PROPERTY LINE (TYP)

EXISTING NATURAL DRAINAGE

EXISTING WATER MAIN LINE

GLACIER HIGHWAY

EXISTING SEWER MAIN LINE

EXISTING 18" CMP CULVERT

DISCHARGE POINT "A"

SHALLOW DITCH, TO CONVEY DRIVEWAY RUNOFF TO EXISTING STREAM

10615 GLACIER HWY

GARAGE

DRIVEWAY EASEMENT

10635 GLACIER HWY

25' ELECTRICAL EASEMENT

30" MINIMUM DIAMETER CPP CULVERT

PARKING SPACE (TYP)

DRAINAGE DITCH AROUND PERIMETER OF SITE (SEE DETAIL, THIS SHEET)

PROPERTY LINES (TYP)

SCALE IN FEET

0 30 60 100

3125 WILMA AVE

3135 WILMA AVE

3139 WILMA AVE

10651 GLACIER HWY

PROJECT AREA ACCOUNTED FOR IN DRAINAGE REPORT (3.16 ACRES). SEE SHEET NOTE 1

16 17 18 19 20 21 22 23

14 15

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1

GUEST PARKING (TYP)

10615 GLACIER HWY

10635 GLACIER HWY

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

16 17 18 19 20 21 22 23

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1

Guest Parking (Typ)

10615 Glacier Hwy

10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

16 17 18 19 20 21 22 23

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Guest Parking (Typ)

10615 Glacier Hwy

10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

16 17 18 19 20 21 22 23

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Guest Parking (Typ)

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10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

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Garage

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25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

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Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

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10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

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Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

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Guest Parking (Typ)

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10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

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Guest Parking (Typ)

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10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

Property Lines (Typ)

Scale in Feet

0 30 60 100

3125 Wilma Ave

3135 Wilma Ave

3139 Wilma Ave

10651 Glacier Hwy

Project Area Accounted For in Drainage Report (3.16 Acres). See Sheet Note 1

16 17 18 19 20 21 22 23

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Guest Parking (Typ)

10615 Glacier Hwy

10635 Glacier Hwy

Garage

Driveway Easement

25' Electrical Easement

30" Minimum Diameter CPP Culvert

Parking Space (Typ)

Drainage Ditch Around Perimeter of Site (See Detail, This Sheet)

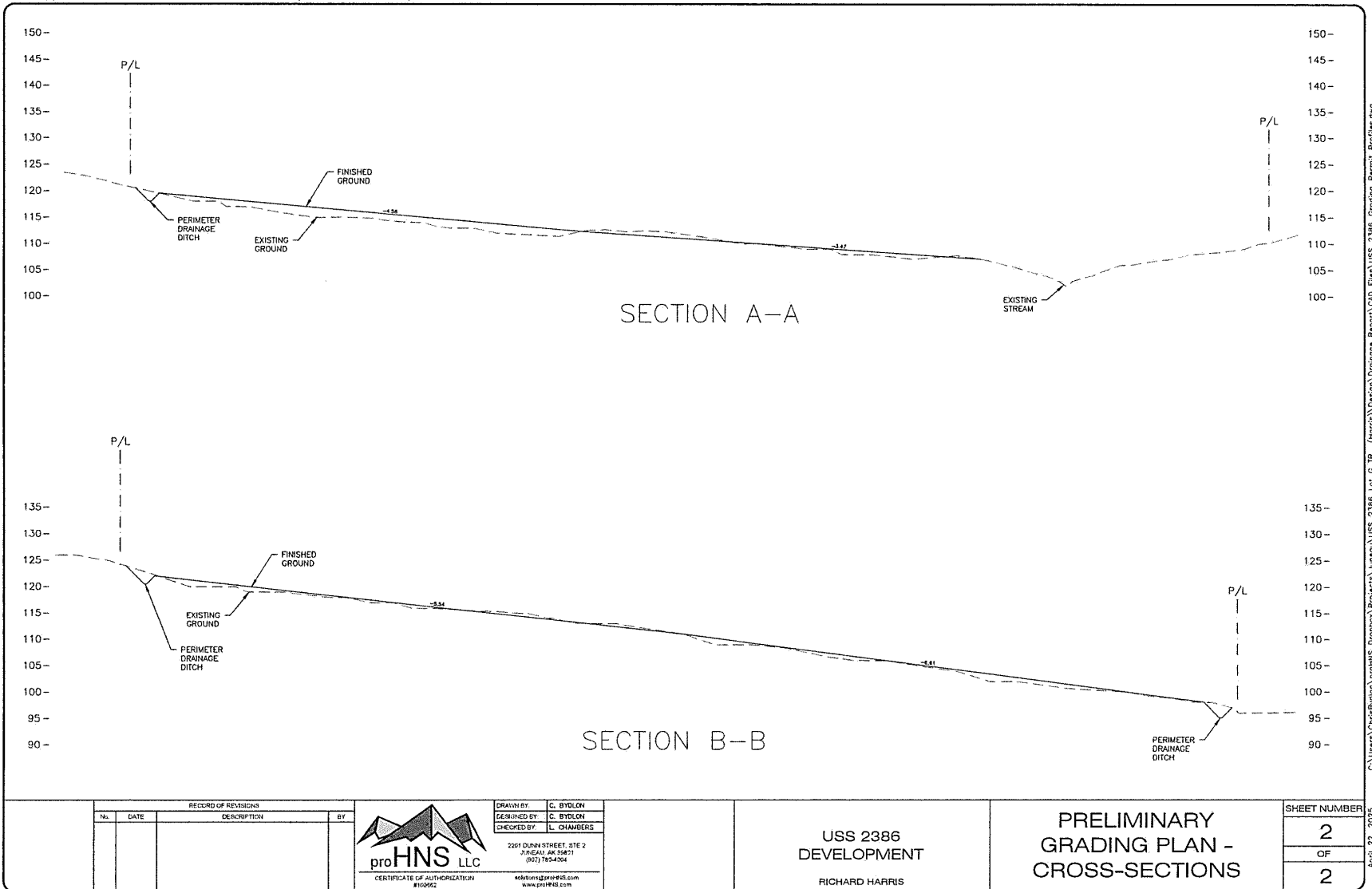
Property Lines (Typ)

Scale in Feet

0 30 60 100

3125

Appendix A - Catchment Areas, Flow Paths & Proposed Onsite Development



Project Description

Appendix B - SSA Calculations

File Name USS 2386 Development_SSA Model_Developed_with_onsite_Improvements.S

Project Options

Flow Units CFS
Elevation Type Elevation
Hydrology Method SCS TR-55
Time of Concentration (TOC) Method SCS TR-55
Link Routing Method Kinematic Wave
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On 00:00:00 0:00:00
End Analysis On 00:00:00 0:00:00
Start Reporting On 00:00:00 0:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

Qty
Rain Gages 1
Subbasins 3
Nodes 7
 Junctions 6
 Outfalls 1
 Flow Diversions 0
 Inlets 0
 Storage Nodes 0
Links 6
 Channels 3
 Pipes 3
 Pumps 0
 Orifices 0
 Weirs 0
 Outlets 0
Pollutants 0
Land Uses 0

Rainfall Details

SN Rain Gage ID	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period	Rainfall Depth	Rainfall Distribu
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Subbasin Summary

Appendix B - SSA Calculations

SN	Subbasin ID	Area	Peak Rate	Weighted Curve Number	Total Rainfall	Total Runoff	Total Runoff	Peak Runoff	Time of Concentration
		(ac)		Number	(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Sub-Basin_A-1_(Upland_Areas)	54.05	484.00	75.27	4.99	2.46	133.18	25.77	0 00:33:57
2	Sub-Basin_A-2_(Project_Area)	3.81	484.00	93.73	4.99	4.27	16.26	4.23	0 00:05:00
3	Sub-Basin_Below_Project_Area	31.60	484.00	76.79	4.99	2.60	82.03	16.76	0 00:30:16

100-Year Storm Event

Node Summary

Appendix B - SSA Calculations

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth
			(ft)	(ft)	(ft)	(ft)	(ft²)	(cfs)	(ft)	(ft)
1	1-Jun	Junction	100.00	105.00	0.00	0.00	0.00	27.89	101.77	0.00
2	2-Jun	Junction	98.00	105.00	0.00	0.00	0.00	27.89	100.11	0.00
3	3-Jun	Junction	90.00	95.00	0.00	0.00	0.00	44.56	92.06	0.00
4	4-Jun	Junction	89.00	95.00	0.00	0.00	0.00	44.57	91.06	0.00
5	7-Jun	Junction	102.40	105.00	0.00	0.00	0.00	27.90	103.25	0.00
6	8-Jun	Junction	101.00	105.00	0.00	0.00	0.00	27.89	102.77	0.00
7	Outlet_to_Mendenhall_Wetlands	Outfall	64.00					44.57	64.63	

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Diameter or Slope (%)	Manning's Height Roughness (in)	Peak Flow (cfs)	Design Flow Capacity (cfs)	Peak Flow/ Design Flow Ratio	Pea V
1	Culvert_Under_Church_Parking_Lot	Pipe	1-Jun	2-Jun	100.00	100.00	99.00	1.0000		27.89	96.34	0.29	
2	Culvert_Under_Engineers_Cutoff_Rd	Pipe	3-Jun	4-Jun	100.00	90.00	89.00	1.0000		44.57	84.88	0.53	
3	ONSITE_CULVERT	Pipe	7-Jun	8-Jun	40.00	101.40	101.00	1.0000		27.89	110.84	0.25	
4	Ditch_below_Engineers_Cutoff	Channel	4-Jun	Outlet_to_Mendenhall_Wetlands	100.00	88.00	64.00	24.0000		44.57	884.37	0.05	
5	Ditch-above_Engineer's_Cutoff	Channel	2-Jun	3-Jun	100.00	97.00	90.00	7.0000		27.89	147.49	0.19	
6	ONSITE_DITCH	Channel	8-Jun	1-Jun	100.00	101.00	100.00	1.0000		27.89	37.29	0.75	

Peak flow in pipe under church parking lot during 100-year storm event

Peak flow in pipe under Engineer's Cutoff Rd during 100-year storm event

Appendix B - SSA Calculations

Subbasin Hydrology

Appendix B - SSA Calculations

Subbasin : Sub-Basin_A-1_(Upland_Areas)

Input Data

Area (ac)	54.05
Peak Rate Factor	484
Weighted Curve Number	75.27
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
Woods, Fair	41.8	C	73
1/4 acre lots, 38% impervious	12.25	C	83
Composite Area & Weighted CN	54.05		75.27

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

$T_c = (0.007 * ((n * L_f)^{0.8})) / ((P^{0.5}) * (S_f^{0.4}))$

Where :

- Tc = Time of Concentration (hr)
- n = Manning's roughness
- Lf = Flow Length (ft)
- P = 2 yr, 24 hr Rainfall (inches)
- Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

- V = 16.1345 * (Sf^0.5) (unpaved surface)
- V = 20.3282 * (Sf^0.5) (paved surface)
- V = 15.0 * (Sf^0.5) (grassed waterway surface)
- V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
- V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
- V = 7.0 * (Sf^0.5) (short grass pasture surface)
- V = 5.0 * (Sf^0.5) (woodland surface)
- V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
- Tc = (Lf / V) / (3600 sec/hr)

Where:

- Tc = Time of Concentration (hr)
- Lf = Flow Length (ft)

Appendix B - SSA Calculations

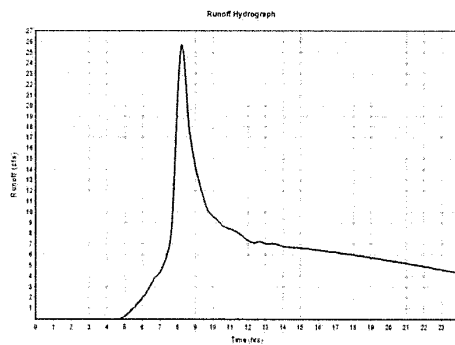
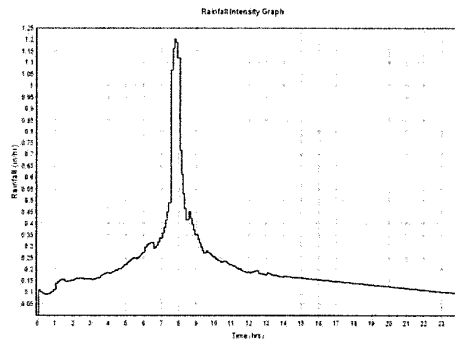
	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.8	0.05	0
Flow Length (ft) :	300	300	0
Slope (%) :	30	10	0
2 yr, 24 hr Rainfall (in) :	2.54	2.54	0
Velocity (ft/sec) :	0.15	0.87	0
Computed Flow Time (min) :	34.21	5.78	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	1000	900	0
Slope (%) :	30	10	0
Surface Type :	Woodland	Paved	Unpaved
Velocity (ft/sec) :	2.74	6.43	0
Computed Flow Time (min) :	6.08	2.33	0
	Subarea	Subarea	Subarea
	A	B	C
Channel Flow Computations			
Manning's Roughness :	0.04	0	0
Flow Length (ft) :	1900	0	0
Channel Slope (%) :	30	0	0
Cross Section Area (ft ²) :	12	0	0
Wetted Perimeter (ft) :	10	0	0
Velocity (ft/sec) :	23.04	0	0
Computed Flow Time (min) :	1.37	0	0
Total TOC (min)	33.95		

Subbasin Runoff Results

Total Rainfall (in)	4.99
Total Runoff (in)	2.46
Peak Runoff (cfs)	25.77
Weighted Curve Number	75.27
Time of Concentration (days hh:mm:ss)	0 00:33:57

Subbasin : Sub-Basin_A-1 (Upland_Areas)

Appendix B - SSA Calculations



Subbasin : Sub-Basin_A-2_(Project_Area)

Appendix B - SSA Calculations

Input Data

Area (ac)	3.81
Peak Rate Factor	484
Weighted Curve Number	93.73
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
Paved parking & roofs	3.16	C	98
Woods, Fair	0.65	C	73
Composite Area & Weighted CN	3.81		93.73

These calculation assume 3.16 acres of the project area is converted to pavement. This assumption shows that regardless of the development of the lot, there is a sufficient capacity in the downstream drainage system to accommodate stormwater from the new development of this property.

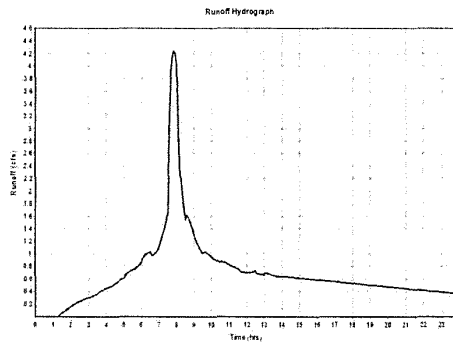
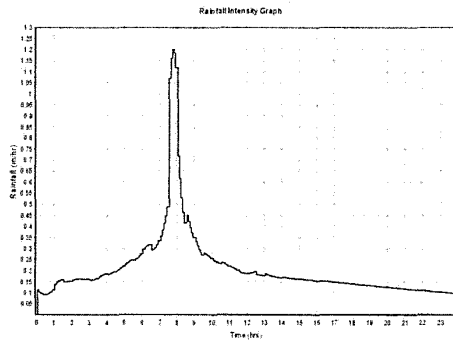
Time of Concentration

	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.005	0	0
Flow Length (ft) :	300	0	0
Slope (%) :	9	0	0
2 yr, 24 hr Rainfall (in) :	2.54	0	0
Velocity (ft/sec) :	5.24	0	0
Computed Flow Time (min) :	0.96	0	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	216	0	0
Slope (%) :	9	0	0
Surface Type :	Paved	Unpaved	Unpaved
Velocity (ft/sec) :	6.1	0	0
Computed Flow Time (min) :	0.59	0	0
Total TOC (min)	1.55		

Subbasin Runoff Results

Total Rainfall (in)	4.99
Total Runoff (in)	4.27
Peak Runoff (cfs)	4.23
Weighted Curve Number	93.73
Time of Concentration (days hh:mm:ss)	0 00:01:33

Subbasin: Sub-Basin_A-2_(Project_Area)



Subbasin : Sub-Basin_Below_Project_Area

Appendix B - SSA Calculations

Input Data

Area (ac)	31.6
Peak Rate Factor	484
Weighted Curve Number	76.79
Rain Gage ID	Rain Gage-01

Composite Curve Number

32	Area	Soil	Curve
Soil/Surface Description	(acres)	Group	Number
Woods, Fair	19.61	C	73
1/4 acre lots, 38% impervious	11.99	C	83
Composite Area & Weighted CN	31.6		76.79

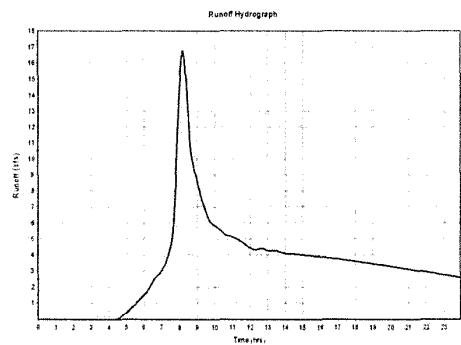
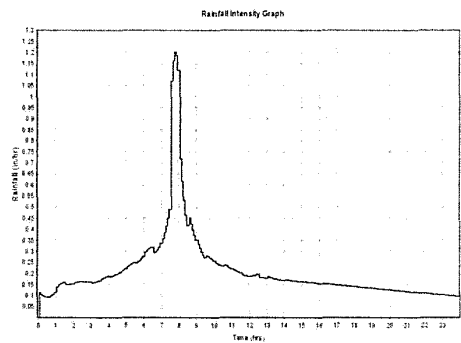
Time of Concentration

	Subarea	Subarea	Subarea
	A	B	C
Sheet Flow Computations			
Manning's Roughness :	0.8	0.05	0
Flow Length (ft) :	300	300	0
Slope (%) :	30	10	0
2 yr, 24 hr Rainfall (in) :	2.54	2.54	0
Velocity (ft/sec) :	0.15	0.87	0
Computed Flow Time (min) :	34.21	5.78	0
	Subarea	Subarea	Subarea
	A	B	C
Shallow Concentrated Flow Computations			
Flow Length (ft) :	1000	1000	0
Slope (%) :	30	10	0
Surface Type :	Woodland	Paved	Unpaved
Velocity (ft/sec) :	2.74	6.43	0
Computed Flow Time (min) :	6.08	2.59	0
	Subarea	Subarea	Subarea
	A	B	C
Channel Flow Computations			
Manning's Roughness :	0.04	0.016	0
Flow Length (ft) :	1117	1734	0
Channel Slope (%) :	30	10	0
Cross Section Area (ft ²) :	12	12	0
Wetted Perimeter (ft) :	10	10	0
Velocity (ft/sec) :	23.04	33.25	0
Computed Flow Time (min) :	0.81	0.87	0
Total TOC (min)	30.27		

Subbasin Runoff Results

Total Rainfall (in)	4.99
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Subbasin : Sub-Basin_Below_Project_Area



Junction Input

Appendix B - SSA Calculations

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft ²)	Minimum Pipe Cover (in)
1	1-Jun	100.00	105.00	5.00	0.00	-100.00	0.00	-105.00	0.00	
2	2-Jun	98.00	105.00	7.00	0.00	-98.00	0.00	-105.00	0.00	
3	3-Jun	90.00	95.00	5.00	0.00	-90.00	0.00	-95.00	0.00	
4	4-Jun	89.00	95.00	6.00	0.00	-89.00	0.00	-95.00	0.00	
5	7-Jun	102.40	105.00	2.60	0.00	-102.40	0.00	-105.00	0.00	
6	8-Jun	101.00	105.00	4.00	0.00	-101.00	0.00	-105.00	0.00	

Appendix B - SSA Calculations

Junction Results

SN	Element	Peak	Peak	Max HGL	Max HGL	Max	Min	Average HGL	Average HGL	Time of	Time of
ID	Inflow	Lateral	Elevation	Depth	Surcharge	Freeboard	Elevation	Depth	Max HGL	Peak Flooding	Flow
	Inflow	Attained	Attained	Depth	Attained	Attained	Attained	Attained	Occurrence	Occurrence	Rate
	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft) (days hh:mm)	(days hh:mm)	(cfs)
1	1-Jun	27.89	0.00	101.77	1.77	0.00	3.23	100.81	0.81	0 08:15	0 00:00
2	2-Jun	27.89	0.00	100.11	2.11	0.00	4.89	99.46	1.46	0 08:16	0 00:00
3	3-Jun	44.56	16.75	92.06	2.06	0.00	2.94	90.81	0.81	0 08:15	0 00:00
4	4-Jun	44.57	0.00	91.06	2.06	0.00	3.94	89.81	0.81	0 08:16	0 00:00
5	7-Jun	27.90	27.90	103.25	0.85	0.00	1.75	102.76	0.36	0 08:15	0 00:00
6	8-Jun	27.89	0.00	102.77	1.77	0.00	2.23	101.81	0.81	0 08:15	0 00:00

Channel Input

Appendix B - SSA Calculations

SN Element ID	Length	Inlet		Outlet		Total Drop	Average Slope	Shape	Height	Width	Manni Roughr
		Invert	Invert	Invert	Invert						
		Elevation (ft)	Offset (ft)	Elevation (ft)	Offset (ft)						
1 Ditch_below_Engineers_Cutoff	100.00	88.00	-1.00	64.00	0.00	24.00	24.0000	Trapezoidal	3.000	8.000	0.0
2 Ditch-above_Engineer's_Cutoff	100.00	97.00	-1.00	90.00	0.00	7.00	7.0000	Trapezoidal	3.000	7.000	0.0
3 ONSITE_DITCH	100.00	101.00	0.00	100.00	0.00	1.00	1.0000	Trapezoidal	2.000	9.000	0.0

Channel Results

Appendix B - SSA Calculations

SN Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Surc Total Depth Ratio	Tot
	(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		
1 Ditch_below_Engineers_Cutoff	44.57	0 08:16	884.37	0.05	26.82	0.06	0.63	0.21	
2 Ditch-above_Engineer's_Cutoff	27.89	0 08:16	147.49	0.19	8.15	0.20	1.41	0.47	
3 ONSITE_DITCH	27.89	0 08:15	37.29	0.75	3.47	0.48	1.77	0.89	

Showing that the offsite
ditches have adequate
capacity

Showing that any onsite ditches
constructed per the detail in
appendix A with a minimum 1%
slope will have adequate capacity

Culvert Crossing: Culvert_Under_Church_Parking_Lot

Crossing Summary Table

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
101.45	10.00	10.00	0.00	1
101.75	14.00	14.00	0.00	1
102.01	18.00	18.00	0.00	1
102.25	22.00	22.00	0.00	1
102.61	27.90	27.90	0.00	1
102.74	30.00	30.00	0.00	1
103.01	34.00	34.00	0.00	1
103.30	38.00	38.00	0.00	1
103.62	42.00	42.00	0.00	1
103.98	46.00	46.00	0.00	1
104.07	50.00	46.98	2.98	8
104.00	46.20	46.20	0.00	Overtopping

Peak flow during 100
year storm event

Flow needed to
overtop church
parking lot during 100
year storm event

Culvert Crossing: Culvert_Under_Engineers_Cutoff_Rd

Crossing Summary Table

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
91.34	10.00	10.00	0.00	1
91.87	19.00	19.00	0.00	1
92.33	28.00	28.00	0.00	1
92.75	37.00	37.00	0.00	1
93.09	44.59	44.59	0.00	1
93.56	55.00	55.00	0.00	1
93.97	64.00	64.00	0.00	1
94.13	73.00	67.41	5.54	8
94.22	82.00	69.36	12.61	6
94.30	91.00	70.98	19.99	5
94.37	100.00	72.40	27.58	5
94.00	64.67	64.67	0.00	Overtopping

Peak flow during 100
year storm event

Flow needed to
overtop Engineer's
Cutoff Rd during 100
year storm event

Culvert Crossing: 30-inch Culvert - Onsite

Crossing Summary Table

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
112.56	10.00	10.00	0.00	1
112.88	14.00	14.00	0.00	1
113.20	18.00	18.00	0.00	1
113.55	22.00	22.00	0.00	1
114.17	27.90	27.90	0.00	1
114.42	30.00	30.00	0.00	1
114.97	34.00	34.00	0.00	1
115.08	38.00	34.76	3.22	9
115.13	42.00	35.10	6.88	6
115.17	46.00	35.38	10.59	5
115.21	50.00	35.64	14.35	5
115.00	34.22	34.22	0.00	Overtopping

Peak flow during 100
year storm event

Flow needed to
overtop onsite
driveway during 100
year storm event



NOAA Atlas 14, Volume 7, Version 2 AUKE BAY

Station ID: 50-0464

Location name: Juneau, Alaska, USA*

Latitude: 58.3833°, Longitude: -134.65°

Elevation:

Elevation (station metadata): 42 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Douglas Kane, Sarah Dietz, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Svetlana Stuefer, Amy Tidwell, Carl Trypsakuk, Dale Unruh, Michael Yetka, Erica Botta, Geoffrey Bonnin, Sarah Helm, Lillian Hiner, Elizabeth Lilly, Jayashree Narayanan, Fenglin Yan, Tan Zhao

NOAA, National Weather Service, Silver Spring, Maryland
and
University of Alaska Fairbanks, Water and Environmental Research Center

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.115 (0.084-0.161)	0.135 (0.098-0.191)	0.163 (0.116-0.234)	0.186 (0.130-0.271)	0.218 (0.150-0.324)	0.242 (0.164-0.365)	0.266 (0.177-0.407)	0.295 (0.194-0.458)	0.333 (0.215-0.527)	0.361 (0.229-0.580)
10-min	0.155 (0.113-0.217)	0.182 (0.131-0.257)	0.219 (0.155-0.315)	0.250 (0.175-0.365)	0.292 (0.200-0.434)	0.325 (0.220-0.491)	0.358 (0.239-0.548)	0.396 (0.260-0.615)	0.447 (0.288-0.708)	0.485 (0.308-0.779)
15-min	0.182 (0.133-0.254)	0.213 (0.154-0.301)	0.256 (0.182-0.368)	0.293 (0.205-0.427)	0.342 (0.235-0.509)	0.380 (0.257-0.574)	0.419 (0.279-0.642)	0.463 (0.304-0.719)	0.523 (0.337-0.828)	0.567 (0.360-0.911)
30-min	0.241 (0.176-0.337)	0.283 (0.204-0.400)	0.340 (0.241-0.489)	0.388 (0.271-0.566)	0.454 (0.311-0.675)	0.504 (0.341-0.761)	0.556 (0.370-0.851)	0.615 (0.404-0.956)	0.694 (0.447-1.10)	0.753 (0.478-1.21)
60-min	0.330 (0.241-0.461)	0.387 (0.280-0.547)	0.466 (0.331-0.670)	0.532 (0.372-0.776)	0.622 (0.427-0.925)	0.691 (0.467-1.04)	0.761 (0.507-1.16)	0.842 (0.553-1.31)	0.950 (0.612-1.50)	1.03 (0.655-1.66)
2-hr	0.484 (0.354-0.678)	0.568 (0.410-0.802)	0.684 (0.486-0.983)	0.780 (0.546-1.14)	0.913 (0.626-1.36)	1.02 (0.686-1.53)	1.12 (0.744-1.71)	1.24 (0.812-1.92)	1.39 (0.898-2.21)	1.53 (0.955-2.50)
3-hr	0.636 (0.465-0.889)	0.747 (0.540-1.06)	0.899 (0.638-1.29)	1.03 (0.718-1.50)	1.20 (0.823-1.78)	1.33 (0.902-2.01)	1.47 (0.978-2.25)	1.62 (1.07-2.52)	1.83 (1.18-2.90)	2.07 (1.35-3.40)
6-hr	1.02 (0.741-1.42)	1.19 (0.860-1.68)	1.43 (1.02-2.06)	1.64 (1.14-2.38)	1.91 (1.31-2.84)	2.13 (1.44-3.21)	2.34 (1.56-3.58)	2.59 (1.70-4.03)	2.92 (1.88-4.62)	3.26 (2.02-5.09)
12-hr	1.51 (1.11-2.12)	1.78 (1.28-2.51)	2.14 (1.52-3.08)	2.44 (1.71-3.56)	2.85 (1.96-4.24)	3.18 (2.15-4.80)	3.51 (2.34-5.36)	3.89 (2.56-6.05)	4.40 (2.83-6.96)	4.78 (3.04-7.67)
24-hr	2.16 (1.78-2.66)	2.54 (2.06-3.16)	3.06 (2.43-3.88)	3.47 (2.72-4.48)	4.05 (3.11-5.34)	4.51 (3.41-6.04)	4.99 (3.71-6.78)	5.52 (4.04-7.63)	6.23 (4.46-8.78)	6.76 (4.77-9.67)
2-day	2.87 (2.36-3.53)	3.35 (2.72-4.17)	4.00 (3.18-5.07)	4.50 (3.52-5.80)	5.18 (3.98-6.83)	5.72 (4.32-7.65)	6.26 (4.65-8.51)	6.84 (5.00-9.44)	7.60 (5.45-10.7)	8.17 (5.77-11.7)
3-day	3.35 (2.75-4.12)	3.89 (3.16-4.85)	4.62 (3.67-5.86)	5.17 (4.05-6.66)	5.91 (4.53-7.78)	6.48 (4.89-8.66)	7.04 (5.24-9.57)	7.63 (5.58-10.5)	8.41 (6.03-11.8)	8.99 (6.35-12.9)
4-day	3.76 (3.09-4.63)	4.36 (3.53-5.42)	5.14 (4.09-6.53)	5.74 (4.49-7.40)	6.52 (5.00-8.58)	7.11 (5.37-9.51)	7.70 (5.72-10.5)	8.29 (6.07-11.4)	9.08 (6.51-12.8)	9.67 (6.83-13.8)
7-day	4.88 (4.01-6.01)	5.63 (4.57-7.02)	6.60 (5.25-8.37)	7.30 (5.72-9.41)	8.20 (6.29-10.8)	8.87 (6.70-11.9)	9.52 (7.07-12.9)	10.1 (7.42-14.0)	11.0 (7.86-15.4)	11.6 (8.18-16.6)
10-day	5.82 (4.78-7.16)	6.70 (5.43-8.34)	7.81 (6.21-9.91)	8.60 (6.74-11.1)	9.61 (7.38-12.7)	10.3 (7.81-13.8)	11.0 (8.20-15.0)	11.7 (8.58-16.1)	12.6 (9.00-17.7)	13.2 (9.33-18.9)
20-day	8.78 (7.20-10.8)	10.1 (8.18-12.6)	11.7 (9.30-14.8)	12.8 (10.0-16.5)	14.2 (10.9-18.7)	15.2 (11.5-20.3)	16.1 (12.0-21.9)	16.9 (12.4-23.3)	18.0 (12.9-25.3)	18.8 (13.3-26.9)
30-day	11.6 (9.50-14.2)	13.3 (10.8-16.6)	15.4 (12.2-19.5)	16.8 (13.2-21.7)	18.6 (14.3-24.5)	19.8 (15.0-26.5)	20.9 (15.6-28.5)	21.9 (16.0-30.3)	23.2 (16.6-32.7)	24.2 (17.1-34.6)
45-day	15.3 (12.6-18.8)	17.6 (14.3-21.9)	20.4 (16.2-25.8)	22.3 (17.4-28.7)	24.6 (18.9-32.4)	26.2 (19.8-35.1)	27.7 (20.6-37.6)	29.0 (21.2-40.0)	30.6 (22.0-43.2)	31.9 (22.5-45.7)
60-day	18.3 (15.0-22.5)	21.0 (17.0-26.2)	24.4 (19.4-31.0)	26.7 (21.0-34.5)	29.6 (22.7-39.0)	31.7 (23.9-42.4)	33.5 (24.9-45.6)	35.2 (25.7-48.6)	37.4 (26.8-52.7)	39.0 (27.6-55.8)

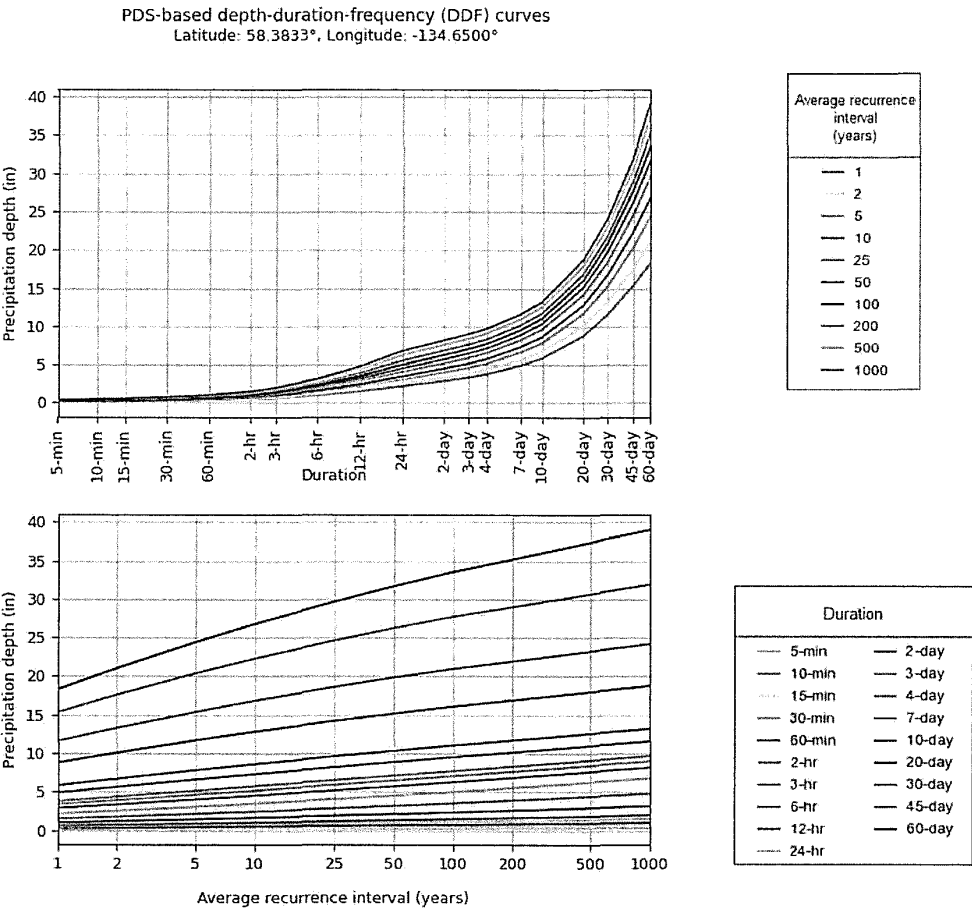
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

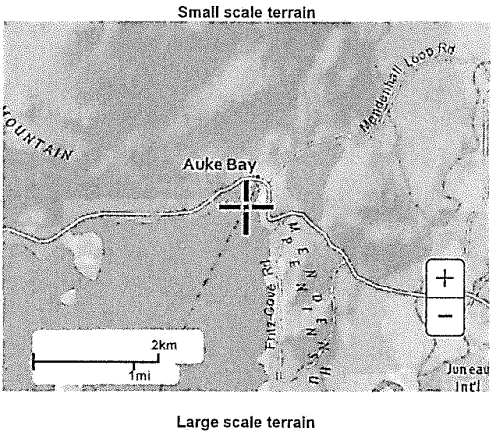
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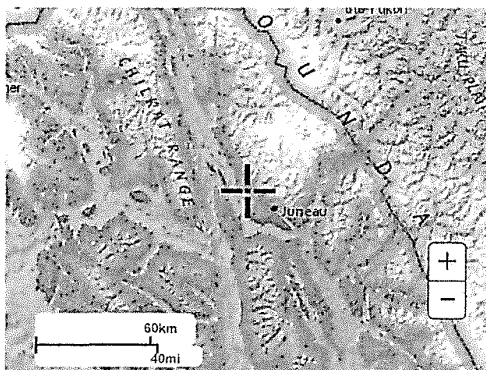
PF graphical



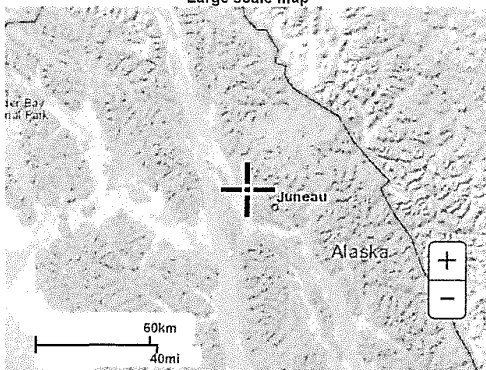
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Maps & aerals





Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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Chatham Area, Alaska

E20C—Alexander Archipelago-Gulf of Alaska Coast-Maritime Lowland-Coastal Plains, Deltas and Mud Flats

Map Unit Setting

National map unit symbol: 314jr

Elevation: -10 to 30 feet

Mean annual precipitation: 60 to 143 inches

Mean annual air temperature: 36 to 42 degrees F

Frost-free period: 110 to 185 days

Map Unit Composition

E20-maritime submergent-silty subaqueous and similar soils: 42 percent

E20-maritime water, saline: 34 percent

Minor components: 24 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of E20-maritime Submergent-silty Subaqueous

Setting

Landform: Tidal flats

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Silty and clayey marine deposits

Typical profile

Cg - 0 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 0 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high (0.71 to 1.42 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Very slightly saline to strongly saline (2.0 to 20.0 mmhos/cm)

Sodium adsorption ratio, maximum: 12.0

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Description of E20-maritime Water, Saline

Typical profile

W - 0 to 60 inches: water

Properties and qualities

Slope: 0 percent

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very low
(0.00 in/hr)

Frequency of flooding: Frequent

Frequency of ponding: Frequent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0
mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: Unranked

Minor Components

E20-maritime beaches, gravelly

Percent of map unit: 10 percent

Landform: Beaches

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Unranked

E20-maritime wet meadow-silty coastal plains, depressions

Percent of map unit: 5 percent

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

E20-maritime wet meadow-silty low coastal plains

Percent of map unit: 5 percent

Landform: Coastal plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

E20-maritime scrub-gravelly low flood plains

Percent of map unit: 2 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

E20-maritime scrub/sphagnum-organic high coastal plains

Percent of map unit: 2 percent

Landform: Coastal plains

Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Chatham Area, Alaska
Survey Area Data: Version 24, Sep 16, 2024

Chatham Area, Alaska

E20M1—Alexander Archipelago-Gulf of Alaska Coast- Maritime Upland and Subalpine-Rounded Mountains

Map Unit Setting

National map unit symbol: 314jw
Elevation: 20 to 4,790 feet
Mean annual precipitation: 60 to 220 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 110 to 185 days

Map Unit Composition

*E20-maritime forest-loamy colluvial slopes, shallow and similar
soils:* 30 percent
E20-maritime sedge-scrub-organic depressions and similar soils: 21
percent
E20-maritime forest-loamy colluvial and till slopes and similar soils: 19
percent
E20-maritime forest-organic slopes and similar soils: 15 percent
Minor components: 15 percent
*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of E20-maritime Forest-loamy Colluvial Slopes, Shallow

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Organic material over loamy colluvium derived
from sandstone over gravelly colluvium derived from sandstone

Typical profile

Oe - 0 to 4 inches: moderately decomposed plant material
E - 4 to 6 inches: silt loam
Bhs - 6 to 10 inches: very fine sandy loam
Bs - 10 to 20 inches: very gravelly fine sandy loam
R - 20 to 60 inches: bedrock

Properties and qualities

Slope: 76 to 100 percent
Depth to restrictive feature: 16 to 26 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low
to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0
mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Hydric soil rating: No

Description of E20-maritime Sedge-scrub-organic Depressions

Setting

Landform: Depressions

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Organic material

Typical profile

Oi - 0 to 12 inches: peat

Oe - 12 to 60 inches: mucky peat

Properties and qualities

Slope: 0 to 55 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.71 to 3.54 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0
mmhos/cm)

Available water supply, 0 to 60 inches: Very high (about 25.1
inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Description of E20-maritime Forest-loamy Colluvial And Till Slopes

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of
mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Organic material over loamy colluvium and/or
loamy drift

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
E - 2 to 3 inches: gravelly silt loam
Bhs - 3 to 6 inches: gravelly sandy loam
Bs - 6 to 14 inches: very gravelly coarse sandy loam
C - 14 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 35 to 90 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water
(*Ksat*): Moderately high (0.71 to 1.42 in/hr)
Depth to water table: About 10 to 20 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0
mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B/D
Hydric soil rating: No

Description of E20-maritime Forest-organic Slopes

Setting

Landform: Hills
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over gravelly glaciofluvial
deposits

Typical profile

Oi - 0 to 5 inches: peat
Oa - 5 to 28 inches: muck
Cg - 28 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 5 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water
(*Ksat*): Moderately high to high (0.71 to 3.54 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0
mmhos/cm)

Available water supply, 0 to 60 inches: Very high (about 13.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Minor Components

E20-maritime forest-organic well drained slopes, shallow

Percent of map unit: 10 percent

Landform: Mountain slopes

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

E20-maritime rock outcrop and rubbleland

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: Unranked

Data Source Information

Soil Survey Area: Chatham Area, Alaska

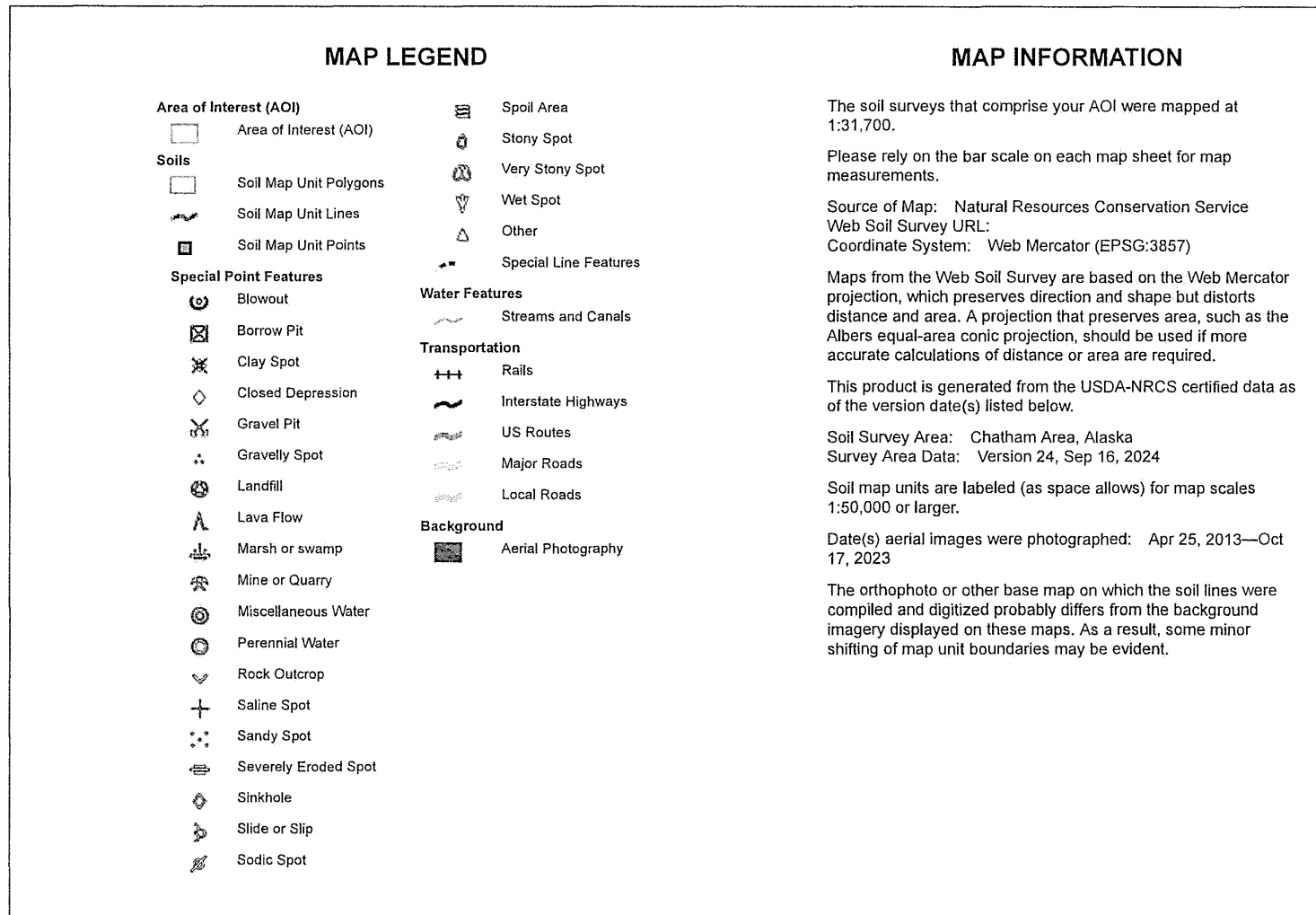
Survey Area Data: Version 24, Sep 16, 2024



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

4/16/2025
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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
E20C	Alexander Archipelago-Gulf of Alaska Coast-Maritime Lowland-Coastal Plains, Deltas and Mud Flats	315.9	37.4%
E20M1	Alexander Archipelago-Gulf of Alaska Coast-Maritime Upland and Subalpine-Rounded Mountains	529.7	62.6%
Totals for Area of Interest		845.6	100.0%



DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

To be completed by Applicant	PROPERTY LOCATION		
	Physical Address		
	Legal Description(s) (Subdivision, Survey, Block, Tract, Lot)		
	Parcel Number(s)		
	☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____		
	LANDOWNER/ LESSEE		
	Property Owner		Contact Person
	Mailing Address		Phone Number(s)
	E-mail Address		
	LANDOWNER/ LESSEE CONSENT		
	Required for Planning Permits, not needed on Building/ Engineering Permits.		
	Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.		
	I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows: A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission. B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.		
	_____ Landowner/Lessee (Printed Name)		_____ Title (e.g.: Landowner, Lessee)
	X _____ Landowner/Lessee (Signature)		_____ Date
_____ Landowner/Lessee (Printed Name)		_____ Title (e.g.: Landowner, Lessee)	
X _____ Landowner/Lessee (Signature)		_____ Date	
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.			
APPLICANT			
Applicant (Printed Name)		Contact Person	
Mailing Address		Phone Number(s)	
E-mail Address			
X _____ Applicant's Signature		_____ Date of Application	

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

		Intake Initials
Case Number	Date Received	



SUBDIVISION AND DEVELOPMENT PLAN APPLICATION

See subdivision hand-outs for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant	PROJECT SUMMARY	
	Number of Existing Parcels _____ Total Land Area _____ Number of Resulting Parcels _____	
	HAS THE PARCEL BEEN CREATED BY A MINOR SUBDIVISION IN THE PRECEDING 24 MONTHS ☐ NO ☐ YES Case Number _____	
	TYPE OF SUBDIVISION OR PLATTING APPROVAL REQUESTED <u>MINOR DEVELOPMENT</u> (changing or creating 13 or fewer lots) ☒ Preliminary Plat (MIP) ☐ Final Plat (MIF) ☐ Panhandle Subdivision ☐ Accretion Survey ☐ Boundary Adjustment ☐ Lot Consolidation (SLC) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____ <u>MAJOR DEVELOPMENT</u> (changing or creating 14 or more lots) ☐ Preliminary Plat (SMP) ☐ Final Plat (SMF) ☐ Preliminary Development Plan – PUD (PDP) ☐ Final Development Plan – PUD (PDF) Preliminary ☐ Development Plan – ARS (ARP) Final ☐ Development Plan – ARS (ARF) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____	
	ALL REQUIRED DOCUMENTS ATTACHED ☐ Pre-application conference notes ☐ Narrative including: ☐ Legal description(s) of property to be subdivided ☐ Existing structures on the land ☐ Zoning district ☐ Density ☐ Access ☐ Current and proposed use of any structures ☐ Utilities available ☐ Unique characteristics of the land or structure(s) ☐ Preliminary Plat checklist	

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

SUBDIVISION/PLATTING FEES	Fees	Check No.	Receipt	Date
Application Fees	\$ _____			
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Total Fee	\$ _____			

For assistance filling out this form, contact the Permit Center at 586-0770.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

Case Number	Date Received
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SUBDIVISION AND DEVELOPMENT PLAN APPLICATION

See subdivision hand-outs for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant	PROJECT SUMMARY	
	Number of Existing Parcels _____ Total Land Area _____ Number of Resulting Parcels _____	
	HAS THE PARCEL BEEN CREATED BY A MINOR SUBDIVISION IN THE PRECEDING 24 MONTHS ☐ NO ☐ YES Case Number _____	
	TYPE OF SUBDIVISION OR PLATTING APPROVAL REQUESTED <u>MINOR DEVELOPMENT</u> (changing or creating 13 or fewer lots) ☒ Preliminary Plat (MIP) ☐ Final Plat (MIF) ☐ Panhandle Subdivision ☐ Accretion Survey ☐ Boundary Adjustment ☐ Lot Consolidation (SLC) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____ <u>MAJOR DEVELOPMENT</u> (changing or creating 14 or more lots) ☐ Preliminary Plat (SMP) ☐ Final Plat (SMF) ☐ Preliminary Development Plan – PUD (PDP) ☐ Final Development Plan – PUD (PDF) Preliminary ☐ Development Plan – ARS (ARP) Final ☐ Development Plan – ARS (ARF) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____	
	ALL REQUIRED DOCUMENTS ATTACHED ☐ Pre-application conference notes ☐ Narrative including: ☐ Legal description(s) of property to be subdivided ☐ Existing structures on the land ☐ Zoning district ☐ Density ☐ Access ☐ Current and proposed use of any structures ☐ Utilities available ☐ Unique characteristics of the land or structure(s) ☐ Preliminary Plat checklist	

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For assistance filling out this form, contact the Permit Center at 586-0770.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

Case Number	Date Received
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(907) 586-0715
 CDD_Admin@juneau.gov
 www.juneau.org/community-development
 155 Heritage Way • Juneau, AK 99801

Ravenswood Subdivision

Case Number: PAC2024 0057
 Applicant: Rob and Lisa Worden
 Property Owner: R&S Construction LLC; Misty Sea Charters & Lodging
 Property Address: 4670 Glacier Highway
 Parcel Code Number: 7B100115063
 Site Size: 221,678 square feet/5.01 acres
 Zoning: D15 Multifamily
 Existing Land Use: Residence

Conference Date: November 20, 2024

Report Issued: December 4, 2024

DISCLAIMER: Pre-application conferences are conducted for the purpose of providing applicants with a preliminary review of a project and timeline. Pre-application conferences are not based on a complete application and are not a guarantee of final project approval.

List of Attendees

Note: Copies of the Pre-Application Conference Report will be emailed, instead of mailed, to participants who have provided their email address below.

Name	Title	Email address
Rob Worden	Applicant	RobLisa@AK.net
David Peterson	Planning	David.Peterson@juneau.gov
Jeff Hedges	Building	Jeffrey.Hedges@juneau.gov
Bridget LaPenter	General Engineering	Bridget.LaPenter@juneau.gov
Sydney Hawkins	Permitting	Sydney.Hawkins@juneau.gov

Revised 5/31/2024

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Conference Summary

Questions/issues/agreements identified at the conference that weren't identified in the attached reports.

The following is a list of issues, comments and proposed actions, and requested technical submittal items that were discussed at the pre-application conference.

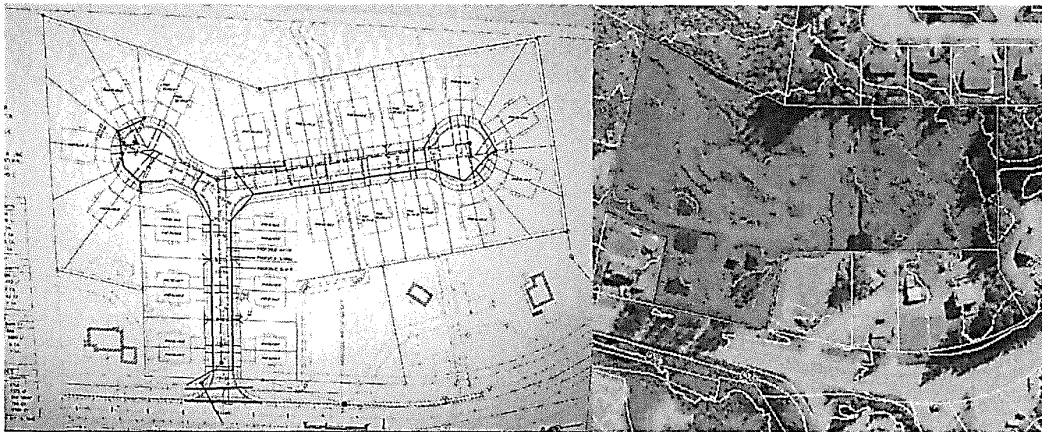
Project Overview

The applicant is proposing a common wall subdivision with 42 dwelling units. Any subdivision involving more than 13 lots is classified as a Major Subdivision and requires approval from the Planning Commission.

A common wall subdivision follows a two-part process. Per 49.65.710, a conditional use permit will be required to approve the development, while a major subdivision preliminary plat will also be required for the subdivision portion.

Staff recommends considering alternative housing products such as condominiums, single-family detached homes, or townhomes, which may be more economically feasible.

Per the table found in T49 49.35.240, a development of 22–52 dwellings, ROW improvements will be required, including a sidewalk on at least one side of the street. For developments of 53–75 dwellings, sidewalks will be required on both sides. Additional infrastructure requirements include a Traffic Impact Analysis, a 24-foot travel way width, streetlights at all intersections, a 60-foot platted ROW width, and paved roads that will be publicly maintained.



Planning Division

1. **Zoning** – Lot is zoned (D15) Multi Family.
 - a. Minimum lot size is 5,000 square feet for standard lots and 3,000 square feet for Bungalow lots.
 - b. Minimum lot width for standard lots is 50 feet. Minimum lot width for Common Wall dwellings is 30 feet. Minimum lot width for bungalow lots is 25 feet.
2. **Table of Permissible Uses** – D15 zoned lots are intended to accommodate densities of 15 dwelling units per acre.

3. Subdivision – 49.15.402 Major subdivisions.

A conditional use permit will be required for the Alternative Residential Subdivision with a major subdivision permit is required for platting the subdivision creating.

Pre-application conference and sketch plat. A pre-application conference and sketch plat (CBJ 49.15.410) is required prior to submitting an application for a major subdivision.

Application for a preliminary plat and conditional use permit shall be on a form provided by the department, accompanied by a draft preliminary plat and the appropriate fee. The draft plat shall meet the standards set forth in CBJ 49.15.411.

Alternative Residential Subdivision

The proposed ARS shall be reviewed according to the requirements of a conditional use permit as an ARP/ARF case type. (See Article IX attachment)

Planning Commission:

Public notice of the application will be sent to neighbors within 500 feet of the property.

The planning commission will confirm the development coincides with the Comprehensive Area Plan and will determine if any of the following will also be required:

1. A Development Schedule.
2. Verify the use coincides with the comprehensive plan.
3. Whether an Owners Association would be required.
4. Any dedications are required.
5. Any bonds for improvements in addition to bonding for utilities or improvements.
6. The PC may require a letter from the public utility or public agency legally committing to serve the development.
7. Screening requirements.
8. Lighting requirements.

In issuing its notice of decision on a preliminary plat, the commission may accept, amend, or reject the director's proposed recommendations. The decision of the commission approving or denying a preliminary plat application will be set forth in a notice of decision and will specify any conditions or plat notes required for final plat approval. If the preliminary plat is denied, the applicant may submit a revised plat application, without paying additional application fees, within 180 days from the date of the notice of decision.

Construction plans will be required upon approval of the preliminary plat. Construction plans for all required improvements will be submitted to the department for review by the director of engineering and public works for compliance with CBJ 49.35.140.

An application for a final plat shall be on a form provided by the department, accompanied by a final plat and the appropriate fee. The final plat shall meet the conditions of the preliminary plat and standards set forth in CBJ 49.15.412.

Once the application is deemed complete, the director shall schedule the final plat for commission action. If commission action on the final plat will occur more than 12 months after approval of the preliminary plat, public notice of impending commission action on the final plat may be required.

The director shall prepare and submit a report to the commission that addresses compliance of the final plat with this title and the criteria for final plat approval, and that specifies any conditions of approval or plat notes recommended by the director.

Once it has been confirmed that the applicant has complied with any conditions, plat notes, and standards set forth in CBJ 49.15.412, a Notice of Decision will be sent to the Applicant. The applicant has constructed all required improvements or provided a financial guarantee.

The chair of the commission shall sign the plat upon a determination that the final plat meets all of the requirements of this title, that all plat certificates have been signed and notarized, and that all required documents have been submitted for recording with the final plat in accordance with CBJ 49.15.412. Once property taxes have been paid in full for the current year, the department shall ship the original plat, at the applicant's expense, to be recorded with the State Recorder's Office in Anchorage.

4. **Setbacks** – Minimum setback requirement from property lines are:
 - i. Front: 20 feet
 - ii. Rear: 15 feet
 - iii. Side yard: 5 feet
 - iv. Street Side: 13 feet
 - v. Note: Zero-foot setback for the portion of the dwelling with a common wall, five-foot setback or five-foot wide easement for the portion of the dwelling at the common lot line without a common wall, and five-foot setback for the remaining side yards of the lot.
5. **Height** – Maximum permitted height for primary structures is 35 feet, and 25 feet for accessory and bungalow structures.
6. **Access** – Lots shall have direct and practical access to a publicly maintained right-of-way through their frontage. If not already accepted for public maintenance, shall be improved to the applicable standards for public acceptance and maintenance. It shall be the responsibility of the subdivider to pay the cost of the right-of-way improvements. (49.35.250)
7. **Parking & Circulation** –
 - a. Single-family and duplex: 2 spaces per each dwelling unit.
 - b. Multi family units:
 - i. 1 per one-bedroom unit
 - ii. 1.5 per two-bedroom unit
 - iii. 2 per three-bedroom unit
8. **Lot Coverage** – Maximum lot coverage for permissible and conditional uses is 50%.
9. **Vegetative Coverage** – Minimum vegetative coverage in D15 zones is 30%.
10. **Lighting** – Exterior lighting may not shed light or glare above the roofline of the building or beyond the property line of the site. Industrial and exterior lighting shall not be used in a manner that produces glare on public highways or neighboring property.

Prior to issuance of a building permit, the applicant shall submit a lighting plan illustrating the location and type of exterior lighting proposed for the development. Exterior lighting shall be designed and located to minimize offsite glare. Approval of the plan shall at the discretion of the Community Development Department, according to the requirements at §49.40.230(d) [and Historic District Design Guidelines, if applicable].

All exterior lighting fixtures shall be of a “full cutoff” design.

11. **Noise – Construction of buildings and projects.** It is unlawful to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or similar heavy construction equipment, before 7:00 a.m. or after 10:00 p.m., Monday through Friday, or before 9:00 a.m. or after 10:00 p.m., Saturday and Sunday, unless a permit shall first be obtained from the City and Borough building official.
12. **Flood** – Per panel 02110C1551E eff. 9/18/2020, N/A.
13. **Hazard/Mass Wasting/Avalanche/Hillside Endorsement** – A Hillside Endorsement is required if/when excavation of any slope in excess of 18%, or creation of a new slope in excess of 18%.
14. **Wetlands** – N/A
15. **Habitat** – Check with the U.S. Fish and Wildlife on the presence of eagle nests in the area. The presence of eagle nests may impact construction scheduling. No anadromous waterbodies are on the subject parcel, or within 50 feet.
16. **Plat or Covenant Restrictions** – N/A
17. **Traffic** – Per 49.40.300(a)(3) - A development projected to generate more than 250 Average Daily Trips (ADT) but fewer than 500 ADT shall be required to have a *traffic* impact analysis if the Community Development Department Director determines that an analysis is necessary based on the type of development, its location, the likelihood of future expansion, and other factors found relevant by the director.

Per the Trip Generation Manual, 9th Edition, Volume 2, pg.296, the ADT anticipated to be generated by single family housing is expected to be 9.52 ADT/dwelling.

42 dwelling units X 9.52 ADT = 399.84 total ADT generated by this subdivision.

CBJ classifies Glacier Highway as a Collector.

Per 49.35.210(c) (1) Major *collectors*. If a new subdivision involves frontage along a major *collector* street:

- (A) The plat shall note that no lots shall access directly onto the major *collector*.
- (B) Access shall be provided onto an interior access street or a separate frontage road.
- (C) Exception a parcel of land with less than 500 feet of frontage or less than 350 feet of depth may be subdivided so as to allow access directly onto a major *collector* street.

18. **Nonconforming situations** – N/A

Building Division

19. **Building** – No issues with this subdivision.
20. **Outstanding Permits** – BLD20170425 – “Grading, pioneer road, and other work to prepare for development.”

General Engineering/Public Works

21. Engineering –

- a. To adhere to 49.15.402 (C) (4) (E) we are requesting a submittal of a preliminary construction plan with typical section of the streets, pedestrian ways, and storm water management proposed. At the preliminary phase, these items do not need to be designed by an engineer.
 - b. At the time of preliminary plat submittal, submit an erosion control report explaining the method by which the applicant proposes to control erosion and manage runoff, and potential impacts to adjacent properties or water bodies. The report shall include a plan for preservation of ground cover in areas where runoff and resulting erosion need to be minimized.
 - c. *Construction plans to be submitted after the approval of the preliminary plat and before final plat submission. Construction plans must adhere to 49.35.140 and must be signed and stamped by Alaska-licensed engineers for each discipline. Construction plans for this layout of development does not need to include all phases of full buildout of development. For specific requirements, please refer to CBJ code by visiting: <http://www.juneau.org/cddftp/ordinances.php> and referencing chapter 49.35 – Public and Private Improvements.*
 - d. *Prior to final plat, an Engineer's estimate for the installation of public improvements must be submitted. Once this is received, a performance bond amount will be determined and must be paid/posted prior to recording of the final plat. Further discussion regarding the bond can take place once the project phasing is determined. For all options regarding the financial guarantee please refer to 49.55 – Financial Responsibility.*
 - e. *Dependent on the construction plan and schedule an inspection deposit will be required and a private inspector may be hired and managed by CBJ.*
 - f. *Street lighting is required and shall not exceed 250' between poles.*
22. **Drainage** – Drainage report with the submittal of the preliminary plat does not need to be engineered. At time of construction plan submittals, a drainage plan must be submitted and must be signed and stamped by an Alaska-licensed engineer.
23. **Utilities** – (water, power, sewer, etc.) At time of preliminary plat, a draft plan for the proposed water and sewer lines shall be submitted showing existing installed utilities including line sizing and connection points with elevations.

Fire Marshal

24. **Fire Items/Access** – Fire turn-around and fire hydrant locations.

Other Applicable Agency Review

25. Alaska Department of Transportation is requiring a Traffic Impact Analysis (TIA).

List of required applications

Based upon the information submitted for pre-application review, the following list of applications must be submitted in order for the project to receive a thorough and speedy review.

1. Development Permit Application (DPA)
2. Subdivision Application
3. Conditional Use Permit Application

Additional Submittal Requirements

Pre-Application Conference Final Report

Submittal of additional information, given the specifics of the development proposal and site, are listed below. These items will be required in order for the application to be determined Counter Complete.

1. A copy of this pre-application conference report.
2. Preliminary plat (include topography)
3. Hillside endorsement (tentative if slopes in excess of 18% are present).
4. Drainage report
5. Traffic Impact Analysis (TIA)
6. Construction Drawings (After preliminary NOD)

Exceptions to Submittal Requirements

Submittal requirements that staff has determined **not** to be applicable or **not** required, given the specifics of the development proposal, are listed below. These items will **not** be required in order for the application to be reviewed.

1. N/A

Fee Estimates

The preliminary plan review fees listed below can be found in the CBJ code section 49.85.

Based upon the project plan submitted for pre-application review, staff has attempted to provide an accurate estimate for the permits and permit fees which will be triggered by your proposal.

1. 49.85.100(3) and (4) –
 - a. Preliminary Plat is \$110 per lot.
 - b. Final Plat is \$70 per lot.
 - c. Conditional Uses, Class IV uses, \$1,000.

For informational handouts with submittal requirements for development applications, please visit our website at www.juneau.org/community-development.

Submit your Completed Application

You may submit your application(s) online via email to permits@juneau.gov

OR in person with payment made to:

City & Borough of Juneau, Permit Center
230 South Franklin Street
Fourth Floor Marine View Center
Juneau, AK 99801

Phone: (907) 586-0715
Web: www.juneau.org/community-development

Attachments:

Article IX. Alternative Residential Subdivisions 49.15.900
Development-Permit Application (DPA)
Subdivision-Application
Preliminary Plat Checklist

Conditional Use Application (USE)

PART II - CODE OF ORDINANCES
TITLE 49 - LAND USE
Chapter 49.15 - PERMITS
ARTICLE IX. ALTERNATIVE RESIDENTIAL SUBDIVISIONS

ARTICLE IX. ALTERNATIVE RESIDENTIAL SUBDIVISIONS

49.15.900 Purpose.

The general purpose of this article is to provide reasonable minimum standards and procedures for unit-lot residential communities in which all or some of the lots do not substantially conform to the minimum requirements for a traditional subdivided lot. This article provides a housing option to allow dwellings on unit-lots to be conveyed by long-term leases, less than fee-simple ownership, or fee-simple ownership, including condominium and other common-interest communities. The specific purpose of this article is to permit flexibility in the regulation and use of land in order to promote its most appropriate use for unit-lot residential communities; to encourage residential developments that are planned, designed and developed to function as integral units with common facilities; to encourage developments that provide different types of housing options; to encourage development of quality affordable housing; to facilitate the adequate and economical provisions of access and utilities; and to encourage developments that are in harmony with the surrounding area.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.910 Application.

The provisions of this article apply when a parent lot is subdivided into developable unit-lots and where a portion of the parent lot remains.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.920 General provisions.

- (a) *General.* The requirements of this title apply except as provided in this article.
- (b) *Zoning districts.* An alternative residential subdivision is only allowed in the following zoning districts: RR, D-1, D-3, D-5, D-10SF, D-10, D-15, D-18, and LC.
- (c) *Lot size.* The parent lot shall be at least 150 percent of the minimum lot size for the zoning district in which it is located. There is no minimum size for the unit-lots.
- (d) *Other dimensional standards.* The minimum lot dimensions, lot coverage, and vegetative coverage shall be applied to the parent lot and not the unit-lots.
- (e) *Density.*
 - (1) The number of dwelling units permitted in the development shall be calculated by multiplying the maximum number of dwelling units per gross acre permitted in the underlying zoning district by the number of acres in the alternative residential subdivision and rounding to the nearest whole number.
 - (2) Land and water bodies used in calculating the number of dwelling units permitted shall be delineated on the preliminary and final plans in a manner allowing confirmation of acreage and density computations.

-
- (3) The commission may award a density bonus as an incentive for enhancements to the development. The total bonus shall not exceed 50 percent in the RR, D1, D3, D5, D10 zoning districts, and 25 percent in the D-10SF, D15, D18 and LC zoning districts of the density provided in subsection (e)(1) of this section and rounded to the nearest whole number and shall be the sum of individual density bonuses as follows:
- (A) Five percent for each ten percent increment of open space in excess of that required in the zoning district to a maximum bonus of 15 percent for open space in excess of that required;
 - (B) Five percent for a continuous setback greater than 50 feet or ten percent for a continuous setback greater than 50 feet on both sides of a stream, if applicable, designated in the plan as undisturbed open space along important natural water bodies, including anadromous fish streams, lakes, and wetlands;
 - (C) Fifteen percent for a mixture of housing units restricted by a recorded document for a period of 30 years from the first sale:
 - (i) In which ten percent of the dwelling units are set aside for lower income households earning no more than 80 percent of the area median income; or
 - (ii) In which 20 percent of the dwelling units are set aside for workforce households earning no more than 120 percent of the area median income.
 - (D) Up to ten percent for provision of common facilities and additional amenities that provide an unusual enhancement to the general area, such as siting, landscaped buffers, or the creation or preservation of view corridors;
 - (E) Ten percent for dedication of a public right-of-way accessible to all unit-lots consistent with chapter 49.35;
 - (F) Five percent in the RR, D-1, D-3, D-5, and D-10SF zoning districts, and ten percent in the D-10, D-15, D-18 and LC zoning districts for providing shared use pathways to facilitate safe pedestrian and bicycle movement within the development and to ensure non-vehicular access to open space, common facilities and to public services;
 - (G) Five percent for designing all dwelling structures to a five-star plus energy efficiency rating; ten percent for designing all dwelling structures to a six-star energy efficiency rating; and
 - (H) Up to ten percent for using high-efficiency primary heating methods, such as heat pumps, in all dwelling structures.
- (4) A density bonus may be limited or denied if it will more probably than not:
- (A) Materially endanger public health or safety;
 - (B) Substantially be out of harmony with property in the neighboring area;
 - (C) Lack general conformity with the comprehensive plan or another adopted plan; or
 - (D) Create an excessive burden on roads, sewer, water, schools, or other existing or proposed public facilities.
- (f) *Frontage and access.* The parent lot shall front on and be accessed by a publically maintained right-of-way. Access within the development may be exempted from [chapter] 49.35 and be privately owned and maintained if it complies with the following requirements:
- (1) The access shall be located completely on the parent lot;
 - (2) The access does not endanger public safety or welfare and provides for safe pedestrian and vehicular traffic circulation;

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(Supp. No. 145)

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- (3) The access complies with the emergency service access requirements of CBJ [chapter] 19.10;
 - (4) Access to and within the development is paved;
 - (5) The developer submits adequate evidence that upon approval of the development, a homeowners' association will be formed, can obtain liability insurance, and is solely responsible for maintaining the private access—including winter maintenance; and
 - (6) The alternative residential subdivision does not abut a developable parcel that lacks alternative and practical frontage on a publically maintained right-of-way.
- (g) *Utilities.* An alternative subdivision is required to connect each dwelling unit to public sewer and water. A master meter for water shall be installed by the developer.
- (h) *Parking.* Parking required for each dwelling unit may be located on either the parent lot or the unit-lot.
- (i) *Open space.* Open space is required as follows: 25 percent in the RR and D-1 zoning districts; 20 percent in the D-3, D-5 and D-10 zoning districts; 15 percent in the D-10SF district. Open space is not required in the D-15, D-18, or LC zoning districts.
- (j) *Buffer.* There are no setback requirements on the unit-lots. A perimeter buffer is required in lieu of the setback requirements of this title on the parent lot. The presumptive buffer width shall not be less than the setback set by the underlying zoning district to ensure neighborhood harmony and minimize off-site impacts. The commission may enlarge a buffer or a portion of a buffer up to 25 feet in total width, and the commission may reduce a buffer or a portion of a buffer by 75 percent of the setback for the underlying zoning district. The commission may only enlarge or reduce the buffer width upon considering, but not limited to: type of buffer, location of the subdivision structures and uses therein; the location and type of surrounding uses or development; topography; and the presence of existing visual and sound buffers. A buffer shall be vegetated unless the commission requires non-vegetated screening. A buffer may include fencing, natural berm, or other similar features. No parking areas, dwelling units, unit-lots, or permissible uses may be located within the perimeter buffer. Access to the development may cross a portion of the buffer.
- (k) *Parent lot.* Portions of the parent lot not subdivided into unit-lots shall be owned in common by a homeowners' association, or similar entity, comprised of the owners of the unit-lots located within the parent lot.
- (l) *Stormwater management.* Facilities for the control and disposal of stormwater must be adequate to serve the development and areas draining through the development. Management shall be in accordance with the Stormwater Best Management Practices manual. Where appropriate, natural drainage channels, swales, or other similar areas within the open space may be used for stormwater management at the development. The developer shall provide the CBJ Engineering and Public Works Department with an evaluation of offsite drainage outfalls for the additional runoff contributed by the alternative residential subdivision. The commission may require construction of offsite drainage improvements necessary to accommodate additional runoff from the development.
- (m) *Permitted uses.* No primary uses are permitted on the parent lot except a recreational center, community facility, or a child care center. Consistent with the table of permissible uses, 49.25.300, only residential uses and associated accessory structures are allowed on the unit-lots. Accessory dwelling units are prohibited on the parent lot and on any unit-lots. A home occupation or a child care home is permissible on the unit-lots. If an alternative residential subdivision creates a lot that complies with the table of dimensional standards, 49.25.400, for the underlying zoning district, the accessory dwelling unit prohibition of this subsection does not apply.
- (n) *Street sign.* Street signage is required. The developer shall install a street sign provided by the City and Borough of Juneau at the developer's expense. The director shall determine the type of street sign—

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(Supp. No. 145)

addresses or street name—upon considering public health, safety, and welfare given the size of the subdivision.

- (o) *Mailboxes.* Upon consultation with the United States Postal Service, the director shall determine the placement location of mailboxes. The director may require additional improvements and design changes to enable efficient mail delivery and to minimize traffic interferences and compliance with CBJ standard details.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.930 Alternative residential subdivision review process.

- (a) *General procedure.* A proposed alternative residential subdivision shall be reviewed according to the requirements of section 49.15.330, conditional use permit, and in the case of an application proposing a change in the number or boundaries of unit-lots, section 49.15.402, major subdivisions, except as otherwise provided in this article. Approval shall be a two-step process, preliminary plan approval and final plan approval. In cases involving a change in the number or boundaries of unit-lots, the preliminary and final plat submissions required by section 49.15.402 shall be included with the preliminary and final plan submissions required by this chapter.
- (b) *Preapplication conference.* Prior to submission of an application, the director shall conduct an informal preapplication conference with the developer to discuss the proposed alternative residential subdivision. The purpose of the preapplication conference shall be to exchange general and preliminary information and to identify potential issues and bonuses. The developer may discuss project plans and the director may provide an informal assessment of project permit eligibility, but no statement made by either party shall be regarded as binding, and the result of the conference shall not constitute preliminary approval by the department. The conference shall include a discussion of the zoning, size, topography, accessibility, and adjacent uses of the development site; the uses, density and layout of buildings, parking areas, the open space and landscaping proposed for the development; the common facilities; provision of utilities, including solid waste and recycling collection; the access, the vehicle and pedestrian circulation, and winter maintenance including snow removal locations; the development schedule and the alternative residential subdivision permit procedures. The developer shall provide a sketch of the proposed alternative residential subdivision.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.940 Preliminary alternative residential subdivision plan approval.

- (a) *Application.* The developer shall submit to the department one copy of a complete alternative residential subdivision application, which shall include an application form, the required fee, any information required in subsection 49.15.402, the information required by this section, and any other information specified by the director.
- (b) *Required submissions.* The application shall include the following material:
 - (1) *Ownership.* The application shall identify, and shall be signed by or upon, the included written authorization of, all owners, lessees, and optionees of land within the boundaries of all phases of the alternative residential subdivision.
 - (2) *Preliminary development plan.* The application shall include a preliminary development plan, explaining how the proposed alternative residential subdivision will achieve the purposes set forth in section 49.15.900. The preliminary development plan shall summarize the different land uses proposed, including the amount of land for housing, open space, buffer, access, parking and pedestrian circulation; the number and types of housing units and proposed density; the natural features to be protected and hazards to be avoided; and the public, if any, and private services to be provided.

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(Supp. No. 145)

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- (3) *Design.* The application shall describe the design of the alternative residential subdivision, with particular attention to building siting, massing, access, parking, and architectural features; provision of utilities including drainage and trash collection; provision of winter maintenance for access and parking areas; and the circulation of traffic and pedestrians.
- (4) *Open space, common facilities, and general landscaping.* The preliminary plat shall show and describe common facilities, pedestrian circulation to common facilities and amenities, open space, buffers, landscaping, and similar features.
- (5) *Request for density bonuses.* If a density bonus is being applied for, the application shall include a narrative describing the justification for the requested bonus, and the application shall show the nature and extent of the requested bonus.
- (6) *Description of phased development.* The preliminary development plan for a phased alternative residential subdivision shall include:
- (A) A drawing and development schedule for each phase and for the entire alternative residential subdivision;
 - (B) The size and general location of proposed land uses for each phase at the maximum level of density, including maximum allotment of density bonuses;
 - (C) A description of the access (pedestrian and vehicular) connecting all the phases and where they will connect at the alternative residential subdivision boundaries;
 - (D) A description of how the developer will address the cumulative impacts of the phased development on the neighborhood and the natural environment;
 - (E) A description of the overall design theme unifying the phases;
 - (F) An analysis of how each phase in the project will meet the requirements of subsection 49.15.960(b); and
 - (G) A sketch plat consistent with section 49.15.410.
- (c) *Department review.* The director shall advise the developer whether the alternative residential subdivision application is complete, and, if not, what the developer must do to make it complete. Within 45 days after determining an application is complete, the director shall schedule the preliminary plan for a public hearing before the commission. The director shall give notice to the developer and the public according to section 49.15.230.
- (d) *Commission action.* The commission may approve an alternative residential subdivision preliminary plan if it meets the following requirements:
- (1) The development protects natural features and avoids natural hazards by reserving them as open space;
 - (2) The development is consistent with the land use code;
 - (3) The development incorporates perimeter buffers sufficient to minimize off-site impacts of the subdivision and to maximize harmony with the neighborhood;
 - (4) Utilities proposed for connection to the City and Borough system meet City and Borough standards, and all others are consistent with sound engineering practices, as determined by the City and Borough Engineering and Public Works Department;
 - (5) The configuration of the development provides for economy and efficiency in utilities, housing construction, access, parking and circulation;

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(Supp. No. 145)

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- (6) If the approval is for a phased development, that each phase is consistent with the preliminary development plan and design of the entire alternative residential subdivision;
 - (7) Adequately addresses the cumulative impacts of the phased development on the neighborhood and the natural environment; and
 - (8) If the approval includes an allotment of a density bonus, the density bonus complies with section 49.15.920(e)(4).
- (e) *Expiration.* Approval of a preliminary plan shall expire 18 months after the commission notice of decision unless a final plan for the entire project or, in the case of a phased development, the first phase thereof, is submitted to the department for commission action. An application for extension of a preliminary plan shall be according to section 49.15.250, development permit extension.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.950 Final alternative residential subdivision plan approval.

- (a) *Application.* Upon completion of all conditions of the preliminary plan, the developer shall submit an application, fee, and a final plan for commission approval.
- (b) *Homeowners' association.* The formation of a homeowners' association, or similar entity, is required.
 - (1) The articles of incorporation and bylaws of the homeowners' association, required under A.S. 34.08 or this chapter, shall be prepared by a lawyer licensed to practice in the state.
 - (2) The homeowners' association shall be responsible for the maintenance of open space, water and sewer utilities, and stormwater control features and drainages. The association documents shall specify how any other common facilities shall be operated and maintained. The association documents shall require homeowners to pay periodic assessments for the operation, maintenance and repair of common facilities. The documents shall require that the governing body of the association adequately maintain common facilities.
 - (3) If the alternative residential subdivision is phased, the association documents shall specify how the cost to build, operate, and maintain improved open space and common facilities shall be apportioned among homeowners of the initial phase and homeowners of later phases.
 - (4) The homeowners' association documents shall be recorded with the approved final plat.
- (c) *Commission action.* The commission may approve the final plan if it substantially conforms to the approved preliminary plan and all requirements of this article.
- (d) *Expiration.* An approved final plan shall expire 18 months after recording if the applicant fails to obtain an associated building permit and make substantial construction progress. An application for extension of a final plan shall be according to section 49.15.250, development permit extension.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.960 Phased development.

- (a) *Phasing allowed.* An applicant may develop an alternative residential subdivision in phases, provided the initial application includes a preliminary development plan sufficient to assess the cumulative effects of the entire alternative residential subdivision on the neighborhood and the environment according to the standards in subsection 49.15.940.

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- (b) *Completion of an individual phase.* Each phase shall be so designed and implemented that, when considered with reference to any previously constructed phases but without reference to any subsequent phases, it meets the design and density standards applicable to the entire alternative residential subdivision. Construction and completion of open space and common facilities serving each phase in an alternative residential subdivision shall proceed at a rate no slower than that of other structures in that phase. No phase shall be eligible for final plan approval until all components of all preceding phases are substantially complete and homeowners' association documents have been approved.
 - (c) *Standards for phases.* Each phase of an alternative residential subdivision shall be reviewed according to the provisions of this chapter then current. Each phase of an alternative residential subdivision shall maintain design continuity with earlier phases. At no point during a phased development shall the cumulative density exceed that established in the approved preliminary plan.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

49.15.970 Amendments to approved alternative residential subdivision plan.

- (a) *Request for amendment.* The developer of an alternative residential subdivision may request an amendment to an approved preliminary or final alternative residential subdivision plan. The request shall state the reasons for the amendment and shall be submitted in writing to the director, who shall inform the developer within 15 days whether the request shall be processed as a minor amendment or major amendment.
- (b) *Minor amendment.* A minor amendment may be submitted without a filing fee and may be approved by the director. For purposes of this section, a minor amendment is a change consistent with the conditions of the original plan approval, and would result in:
 - (1) Insignificant change in the outward appearance of the development;
 - (2) Insignificant impacts on surrounding properties;
 - (3) Insignificant modification in the location or siting of buildings or open space;
 - (4) No reduction in the number of parking spaces below that required;
 - (5) A delay of no more than one year in the construction or completion schedule for the project or, in the case of a phased project, the phase for which the amendment is requested.
- (c) *Major amendment.* All other amendments shall be reviewed by the commission upon payment of a filing fee and in accordance with the requirements of the original plan approval.

(Serial No. 2018-41(c), § 2, 12-17-2018, eff. 1-17-2019)

DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

PROPERTY LOCATION		
Physical Address _____		
Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) _____		
Parcel Number(s) _____		
☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____		
LANDOWNER/ LESSEE		
Property Owner _____		Contact Person _____
Mailing Address _____		Phone Number(s) _____
E-mail Address _____		
LANDOWNER/ LESSEE CONSENT		
Required for Planning Permits, not needed on Building/ Engineering Permits. Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.		
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows: A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission. B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.		
_____ Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)		
X _____ Landowner/Lessee (Signature) Date		
_____ Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)		
X _____ Landowner/Lessee (Signature) Date		
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.		
APPLICANT		
Applicant (Printed Name) _____		Contact Person _____
Mailing Address _____		Phone Number(s) _____
E-mail Address _____		
X _____ Applicant's Signature Date of Application		

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

	Intake Initials
Case Number	Date Received



SUBDIVISION AND DEVELOPMENT PLAN APPLICATION

See subdivision hand-outs for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant	PROJECT SUMMARY	
	Number of Existing Parcels _____ Total Land Area _____ Number of Resulting Parcels _____	
	HAS THE PARCEL BEEN CREATED BY A MINOR SUBDIVISION IN THE PRECEDING 24 MONTHS ☐ NO ☐ YES Case Number _____	
	TYPE OF SUBDIVISION OR PLATTING APPROVAL REQUESTED <u>MINOR DEVELOPMENT</u> (changing or creating 13 or fewer lots) ☐ Preliminary Plat (MIP) ☐ Final Plat (MIF) ☐ Panhandle Subdivision ☐ Accretion Survey ☐ Boundary Adjustment ☐ Lot Consolidation (SLC) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____ <u>MAJOR DEVELOPMENT</u> (changing or creating 14 or more lots) ☐ Preliminary Plat (SMP) ☐ Final Plat (SMF) ☐ Preliminary Development Plan – PUD (PDP) ☐ Final Development Plan – PUD (PDF) Preliminary ☐ Development Plan – ARS (ARP) Final ☐ Development Plan – ARS (ARF) ☐ Bungalow Lot Subdivision ☐ Common Wall/Zero Lot Subdivision ☐ Other _____	
	ALL REQUIRED DOCUMENTS ATTACHED ☐ Pre-application conference notes ☐ Narrative including: ☐ Legal description(s) of property to be subdivided ☐ Existing structures on the land ☐ Zoning district ☐ Density ☐ Access ☐ Current and proposed use of any structures ☐ Utilities available ☐ Unique characteristics of the land or structure(s) ☐ Preliminary Plat checklist	

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

SUBDIVISION/PLATTING FEES	Fees	Check No.	Receipt	Date
Application Fees	\$ _____			
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Total Fee	\$ _____			

For assistance filling out this form, contact the Permit Center at 586-0770.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

Case Number	Date Received
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PRELIMINARY PLAT CHECK LIST

Name of Proposed Subdivision: _____

The following items must be included with the initial submittal of a Preliminary Plat:

- ☐ Application, filled out completely
- ☐ Application fee (see fee schedule)
- ☐ Project Narrative
- ☐ Five (5) – 24" by 36" Copies
- ☐ Pre-application Conference Report
- ☐ Lot Closure Report
- ☐ Disclosure of all known environmental hazards and any proposed mitigation measures recommended in the applicable environmental document.
- ☐ Preliminary Plat Checklist: I have reviewed the checklist and all submittals for completeness and accuracy.

Applicant or Surveyor - Signature

Date

Applicant or Surveyor - Print Name

GENERAL REQUIREMENTS

- ☐ The preliminary plat shall be prepared by a professional land surveyor, registered in the State of Alaska
- ☐ The preliminary plat shall be submitted on 22 by 34 inch sheets. The director of engineering and public works may approve alternate sheet sizes
- ☐ The preliminary plat shall be drawn with black ink to a scale of one-inch to 100 feet or less, or other suitable scale approved by the director of engineering and public works
- ☐ The preliminary plat shall be oriented with north toward the top of the sheet.
- ☐ A vicinity map shall be located in the upper right-hand corner of the sheet
- ☐ The vicinity map shall be oriented in the same direction as the plat
- ☐ A suitable north arrow shall be shown for the plat and vicinity map
- ☐ All line work and lettering must be of professional quality, and all line widths and lettering sizes must be of such size that all information can be clearly shown without overlap or confusion

GRAPHIC REQUIREMENTS - A preliminary plat shall contain the following information:

Title block - An enclosed title block in the lower right-hand corner containing the following information:

- ☐ The proposed name of the subdivision
- ☐ The legal description of the parcel to be subdivided including U.S. Survey, U.S. Mineral Survey, A.T.S. number or section, township, and range number, as applicable
- ☐ "City and Borough of Juneau, Alaska"
- ☐ "State Recorder's Office at Juneau"
- ☐ The date the preliminary plat was prepared and revised
- ☐ The horizontal scale
- ☐ The name and address of the owner of record
- ☐ The name, address, and telephone number of the surveyor preparing the preliminary plat

Preliminary Plat Checklist

Updated 1/2018

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Lot, block, and street information:

- ☐ The area of each lot
- ☐ The dimensions in feet and hundredths of a foot
- ☐ An identifying number and letter for lots and blocks
- ☐ Lots numbered consecutively, commencing with the number "1," with no omissions or duplications
- ☐ If the remainder of an original parcel being subdivided is relatively large, it shall be designated as a "tract" with an identifying number
- ☐ All parcels of land intended to be dedicated for public use or reserved for the use of all of the property owners in the proposed subdivision shall be shown as lots, and consecutively numbered. The purpose and any conditions or limitations on the use of the parcel shall be noted on the plat
- ☐ Abutting properties shall be shown with dashed lines, numbers, and/or letters
- ☐ For resubdivisions or public way vacations, the lines and legal description of the previous lots shall be shown with light dashed lines, numbers, and/or letters, or by a separate plat on the same sheet showing the previous lot lines
 - ☐ The minimum data shown for each curve shall be as follows:
 - ☐ Length
 - ☐ Central angle
 - ☐ Radius
 - ☐ Bearing and distance of long chord
 - ☐ Setbacks shall be shown on all corner lots and any lots with multiple frontage. Setbacks shall be shown on typical lots

Boundary lines:

- ☐ All boundary lines of the subdivision with bearings and distances described
- ☐ All retraced boundary lines shall show record and measured bearings and distances where they differ. Record dimension information shall be shown within parentheses and include a record source identification
- ☐ The exterior boundary lines of the subdivision shall be a solid black opaque line that is of a width that distinguishes it from all other property lines shown on the plat
- ☐ If phasing is proposed, then the boundaries and number of each phase, sequential lot numbering, and a subdivision name consistent with previous phases shall be shown

Monumentation:

- ☐ The monuments used to establish the basis of bearing
- ☐ Each monument found or set shall be identified on the plat by a symbol
- ☐ A complete description of the monument, including type and all information printed on the cap. A typical drawing shall be shown for each type of monument cap set
- ☐ A legend showing the symbols for all the types of monuments
- ☐ The identification, description location, elevation, and datum of the benchmark used to establish vertical control

Site access, circulation, and utilities:

- ☐ The widths and names of existing rights-of-way within the subdivision and within 100 feet of the subdivision boundary
- ☐ Proposed rights-of-way, including their widths and proposed names
- ☐ The grades of existing and proposed streets within these rights-of-way
- ☐ The width, ownership, use, and record reference of all proposed and existing easements within the subdivision and within 100 feet of the subdivision boundary
- ☐ The width, ownership, and use of all proposed easements

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Preliminary Plat Checklist

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- ☐ All proposed and existing easements shall have sufficient dimensions shown to determine their location on the ground
- ☐ Existing trails or pathways within the subdivision and within 100 feet of the subdivision boundary, including the width of any associated rights-of way or easements
- ☐ Proposed trails or pathways and widths of their rights-of-way
- ☐ If the plat submitted covers only a part of the tract under the control of the applicant, a sketch plat of the prospective street system of the unplatted part shall be submitted
- ☐ The location of any existing or proposed driveways/curb cuts that access or are proposed to access any existing or proposed street

Topographic information:

- ☐ For slopes of less than five percent, show one foot contour lines and include spot elevations at all breaks in grade, along all drainage channels or swales, and at selected points not more than 100 feet apart in all directions
- ☐ For slopes between five percent and ten percent, show two foot contour lines
- ☐ For slopes greater than ten percent, show five foot contour lines
- ☐ Every fifth elevation contour shall be distinctive and clearly labeled
- ☐ Dashed lines shall represent existing contours
- ☐ Mapping shall include any significant features which can materially affect the design of the subdivision, including, but not limited to, structures, fences, walls, and utility poles
- ☐ If irregular slopes or special features are present, additional contour information may be required by the director of engineering and public works for planning or construction purposes. Additional required information may include projecting the topography of the site after grading has taken place, showing such items as:
 - ☐ Pad elevations and drainage patterns for each lot
 - ☐ Tops and toes of all manufactured slopes, including daylight lines
 - ☐ Existing and proposed retaining wall locations and heights
- ☐ For subdivisions located in hillside areas with slopes greater than eighteen percent, additional requirements apply in accordance with CBJ 49.70, Article II

Sewer and water:

- ☐ Existing sewer and water mains within the tract with pipe sizes and grades
- ☐ A draft plan for proposed water and sewer lines showing the size, approximate slope, and connection points with elevations for the purpose of determining the feasibility of construction

Multisheet plats:

- ☐ When a plat requires more than one sheet, exclusive of a certificate sheet, an index sheet shall be included. When a plat requires more than three sheets, a cover sheet shall also be included, showing the subdivision title, a key map, and all certificates. Each additional sheet shall include the following data:
 - ☐ North arrow
 - ☐ Legend
 - ☐ Surveyor's seal and signature
 - ☐ Title block
 - ☐ Sheet _____ of _____
 - ☐ Scale
 - ☐ All plat notes
 - ☐ Vicinity map

Preliminary Plat Checklist

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ADDITIONAL MAPPING OR REPORTS- *At the pre-application meeting, it will be determined if any of the following additional mapping or reports are required to be submitted with the preliminary plat. If required, the following additional mapping or reports shall be submitted:*

Hazard and Special Habitat Areas:

- ☐ Any portion of a special flood hazard area, landslide or avalanche area, habitat area as defined by CBJ 49.70.310, or watersheds, either existing at the proposed subdivision site or shown on the overlay maps, adopted pursuant to this title, to exist at the proposed subdivision site, must be depicted on the preliminary plat
- ☐ The boundaries of any wetland areas must be depicted on the preliminary plat. Boundaries must be determined by a person qualified to perform wetland delineations

Soils report:

- ☐ A soils report prepared by an engineer licensed by the State of Alaska shall be required if the proposed subdivision is located farther from the existing public sewer system than specified in CBJ 49.35, and the applicant chooses to provide on-lot waste disposal rather than to connect to the public system. A soils report shall include the following:
 - ☐ Certification that the proposed lots are large enough and have soil of sufficient permeability to permit the construction of approved waste treatment systems for on-lot waste disposal
 - ☐ The location and size of drain fields for each lot
 - ☐ The locations and logs of test borings, percolation test results, and a hydrological evaluation of on-site sewage disposal
 - ☐ If the soils report indicates that the soils found on the site are not of sufficient permeability or the lots are not large enough to permit the construction of systems for on-lot waste disposal, the size of the proposed lots must be increased or alternate methods for waste disposal proposed
 - ☐ The soils report shall describe the nature of the subsurface soils and any soil conditions that would affect the design of the proposed development. The soils report shall state whether the proposed subdivision plan is feasible and provide general solutions for all known geotechnical conditions or problems

Drainage report:

- ☐ A preliminary report specifying the method by which the applicant proposes to manage surface and subsurface drainage for the subdivision and the effect of such method on adjacent areas. Unlike the drainage plan required by CBJ 49.35.510, the preliminary drainage report does not need to be prepared by a licensed engineer. The report must address the following:
 - ☐ A calculation of the increase in stormwater runoff resulting from the proposed development as well as the runoff from all drainage areas associated with the site. Runoff calculations shall be based on a fully-developed subdivision and a 25-year storm event
 - ☐ How drainage from the proposed subdivision will join an established drainage channel or channels, unless the director of engineering and public works approves use of an alternative drainage way
 - ☐ An evaluation of existing drainage ways and structures located between the subdivision and the receiving water body, and verification that the existing drainage ways can accommodate the increased runoff. If the increased runoff cannot be handled, the plan must propose solutions to the problem
 - ☐ All required improvements, on or off site, that are shown on the construction plans in accordance with CBJ 49.35, Article V, and that will be constructed as part of the subdivision

Water:

- ☐ For subdivisions of five or more lots, including major subdivisions, the following shall be included, where applicable, in accordance with CBJ 49.15.412:
 - ☐ If a proposed subdivision is located at greater distance from the existing public water system than specified in CBJ 49.35, Article III, and the applicant chooses not to connect to the public system, a statement that the applicant will provide a community water system or that individual wells will be used

Preliminary Plat Checklist

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- ☐ A report by a registered engineer or geologist that clearly supports the legal and physical availability of adequate water. Methods for proof of water availability and the standards for quantity are listed in CBJ 49.35, Article III
- ☐ A copy of the State application for a permit to appropriate water in the quantity required to meet the subdivisions demands
- ☐ This does not apply to remote subdivisions unless: the subdivider of the remote subdivision chooses to provide potable water, a public water system is available and the subdivision falls within the criteria outlined in CBJ 49.35.310(a), or the subdivision has four or fewer lots.
- ☐ The director for minor subdivisions, and the planning commission for major subdivisions, may, for good cause, temporarily waive the requirement to provide a water report and proof of water, and condition the approval of the preliminary plat upon the provision of both documents as part of the final plat application and approval process.

Erosion control:

- ☐ A report explaining the method by which the applicant proposes to control erosion and manage runoff, and potential impacts to adjacent properties or water bodies. The report shall include a plan for preservation of ground cover in areas where runoff and resulting erosion need to be minimized.

Traffic study:

- ☐ A traffic impact analysis may be required with the preliminary plat in accordance with CBJ 49.40.300.

Shadow plats:

- ☐ For subdivisions of five or more lots in transition areas, a shadow plat shall be submitted according to CBJ 49.70.710. The shadow plat shall consist of a sketch superimposed on the proposed subdivision layout. This sketch shall reflect any future resubdivision of the parcels into smaller lots consistent with the higher density and the lot size allowed under the transition zoning.



ALLOWABLE/CONDITIONAL USE PERMIT APPLICATION

See reverse side for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant	PROJECT SUMMARY			
	TYPE OF ALLOWABLE OR CONDITIONAL USE PERMIT REQUESTED			
	☐ Accessory Apartment – Accessory Apartment Application (AAP) ☐ Use Listed in 49.25.300 – Table of Permissible Uses (USE) Table of Permissible Uses Category: _____			
	IS THIS A MODIFICATION or EXTENSION OF AN EXISTING APPROVAL? ☐ YES – Case # _____ ☐ NO			
	UTILITIES PROPOSED WATER: ☐ Public ☐ On Site SEWER: ☐ Public ☐ On Site			
	SITE AND BUILDING SPECIFICS Total Area of Lot _____ square feet Total Area of Existing Structure(s) _____ square feet Total Area of Proposed Structure(s) _____ square feet			
EXTERNAL LIGHTING Existing to remain ☐ No ☐ Yes – Provide fixture information, cutoff sheets, and location of lighting fixtures Proposed ☐ No ☐ Yes – Provide fixture information, cutoff sheets, and location of lighting fixtures				
ALL REQUIRED DOCUMENTS ATTACHED				
☐ Narrative including: ☐ Current use of land or building(s) ☐ Description of project, project site, circulation, traffic etc. ☐ Proposed use of land or building(s) ☐ How the proposed use complies with the Comprehensive Plan		<i>If this is a modification or extension include:</i> ☐ Notice of Decision and case number ☐ Justification for the modification or extension ☐ Application submitted at least 30 days before expiration date		
☐ Plans including: ☐ Site plan ☐ Floor plan(s) ☐ Elevation view of existing and proposed buildings ☐ Proposed vegetative cover ☐ Existing and proposed parking areas and proposed traffic circulation ☐ Existing physical features of the site (e.g.: drainage, habitat, and hazard areas)				

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

ALLOWABLE/CONDITIONAL USE FEES				
	Fees	Check No.	Receipt	Date
Application Fees	\$ _____			
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Pub. Not. Sign Fee	\$ _____			
Pub. Not. Sign Deposit	\$ _____			
Total Fee	\$ _____			

This form and all documents associated with it are public record once submitted.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Case Number	Date Received

Allowable/Conditional Use Permit Application Instructions

Allowable Use permits are outlined in CBJ 49.15.320, Conditional Use permits are outline in CBJ 49.15.330

Pre-Application Conference: A pre-application conference is required prior to submitting an application. There is no fee for a pre-application conference. The applicant will meet with City & Borough of Juneau and Agency staff to discuss the proposed development, the permit procedure, and to determine the application fees. To schedule a pre-application conference, please contact the Permit Center at 586-0770 or via e-mail at permits@juneau.org.

Application: An application for an Allowable/Conditional Use Permit will not be accepted by the Community Development Department until it is determined to be complete. The items needed for a complete application are:

1. **Forms:** Completed Allowable/Conditional Use Permit Application and Development Permit Application forms.
2. **Fees:** Fees generally range from \$350 to \$1,600. Any development, work, or use done without a permit issued will be subject to double fees. All fees are subject to change.
3. **Project Narrative:** A detailed narrative describing the project.
4. **Plans:** All plans are to be drawn to scale and clearly show the items listed below:
 - A. Site plan, floor plan and elevation views of existing and proposed structures
 - B. Existing and proposed parking areas, including dimensions of the spaces, aisle width and driveway entrances
 - C. Proposed traffic circulation within the site including access/egress points and traffic control devices
 - D. Existing and proposed lighting (including cut sheets for each type of lighting)
 - E. Existing and proposed vegetation with location, area, height and type of plantings
 - F. Existing physical features of the site (i.e. drainage, eagle trees, hazard areas, salmon streams, wetlands, etc.)

Document Format: All materials submitted as part of an application shall be submitted in either of the following formats:

1. Electronic copies in the following formats: .doc, .txt, .xls, .bmp, .pdf, .jpg, .gif, .xlm, .rtf (other formats may be preapproved by the Community Development Department).
2. Paper copies 11" X 17" or smaller (larger paper size may be preapproved by the Community Development Department).

Application Review & Hearing Procedure: Once the application is determined to be complete, the Community Development Department will initiate the review and scheduling of the application. This process includes:

Review: As part of the review process the Community Development Department will evaluate the application for consistency with all applicable City & Borough of Juneau codes and adopted plans. Depending on unique characteristics of the permit request the application may be required to be reviewed by other municipal boards and committees. During this review period, the Community Development Department also sends all applications out for a 15-day agency review period. Review comments may require the applicant to provide additional information, clarification, or submit modifications/alterations for the proposed project.

Hearing: All Allowable/Conditional Use Permit Applications must be reviewed by the Planning Commission for vote. Once an application has been deemed complete and has been reviewed by all applicable parties the Community Development Department will schedule the requested permit for the next appropriate meeting.

Public Notice Responsibilities: Allowable/Conditional Use requests must be given proper public notice as outlined in CBJ 49.15.230:

The Community Development Department will give notice of the pending Planning Commission meeting and its agenda in the local newspaper a minimum of 10-days prior to the meeting. Furthermore, CDD will mail notices to all property owners within 500-feet of the project site.

The Applicant will post a sign on the site at least 14 days prior to the meeting. The sign shall be visible from a public right-of-way or where determined appropriate by CDD. Signs may be produced by the Community Development Department for a preparation fee of \$50, and a \$100 deposit that will be refunded in full if the sign is returned within seven days of the scheduled hearing date. If the sign is returned between eight and 14 days of the scheduled hearing \$50 may be refunded. The Applicant may make and erect their own sign. Please contact the Community Development Department for more information.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

SUBDIVISION OWNERSHIP CERTIFICATE

I, CERTIFY THAT MITY SEA CHARTERS & LOGGING LLC, AN ALASKA LIMITED LIABILITY COMPANY, IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I, AS MANAGING MEMBER OF MITY SEA CHARTERS & LOGGING LLC, HAVING THE AUTHORITY TO DO SO, HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO THE PUBLIC OR PRIVATE USE AS NOTED.

NAME _____ DATE _____ 2025

SIGNATURE _____

NOTARY ACKNOWLEDGEMENT

UNITED STATES OF AMERICA

STATE OF ALASKA

THIS IS TO CERTIFY THAT ON THE _____ DAY OF _____, 2025, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____ TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE ABOVE AND FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/HIS/HER/IT SIGNED AND SEALED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN MENTIONED. WITNESS MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

NOTARY PUBLIC FOR ALASKA _____

MY COMMISSION EXPIRES _____

SUBDIVISION OWNERSHIP CERTIFICATE

I, CERTIFY THAT RAS CONSTRUCTION, LLC, AN ALASKA LIMITED LIABILITY COMPANY, IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I, AS MANAGING MEMBER OF RAS CONSTRUCTION, LLC, HAVING THE AUTHORITY TO DO SO, HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO THE PUBLIC OR PRIVATE USE AS NOTED.

NAME _____ DATE _____ 2025

SIGNATURE _____

NOTARY ACKNOWLEDGEMENT

UNITED STATES OF AMERICA

STATE OF ALASKA

THIS IS TO CERTIFY THAT ON THE _____ DAY OF _____, 2025, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____ TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE ABOVE AND FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/HIS/HER/IT SIGNED AND SEALED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN MENTIONED. WITNESS MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

NOTARY PUBLIC FOR ALASKA _____

MY COMMISSION EXPIRES _____

PLANNING COMMISSION PLAT APPROVAL

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF JUNEAU, ALASKA AND THAT THIS PLAT HAS BEEN APPROVED BY THE PLANNING COMMISSION BY PLAT RESOLUTION NO. _____ DATED _____, 2025 AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE JUNEAU RECORDING DISTRICT OFFICE, LOCATED IN ANCHORAGE, ALASKA.

CHAMPERSON OF THE PLANNING COMMISSION _____ DATE _____ 2025

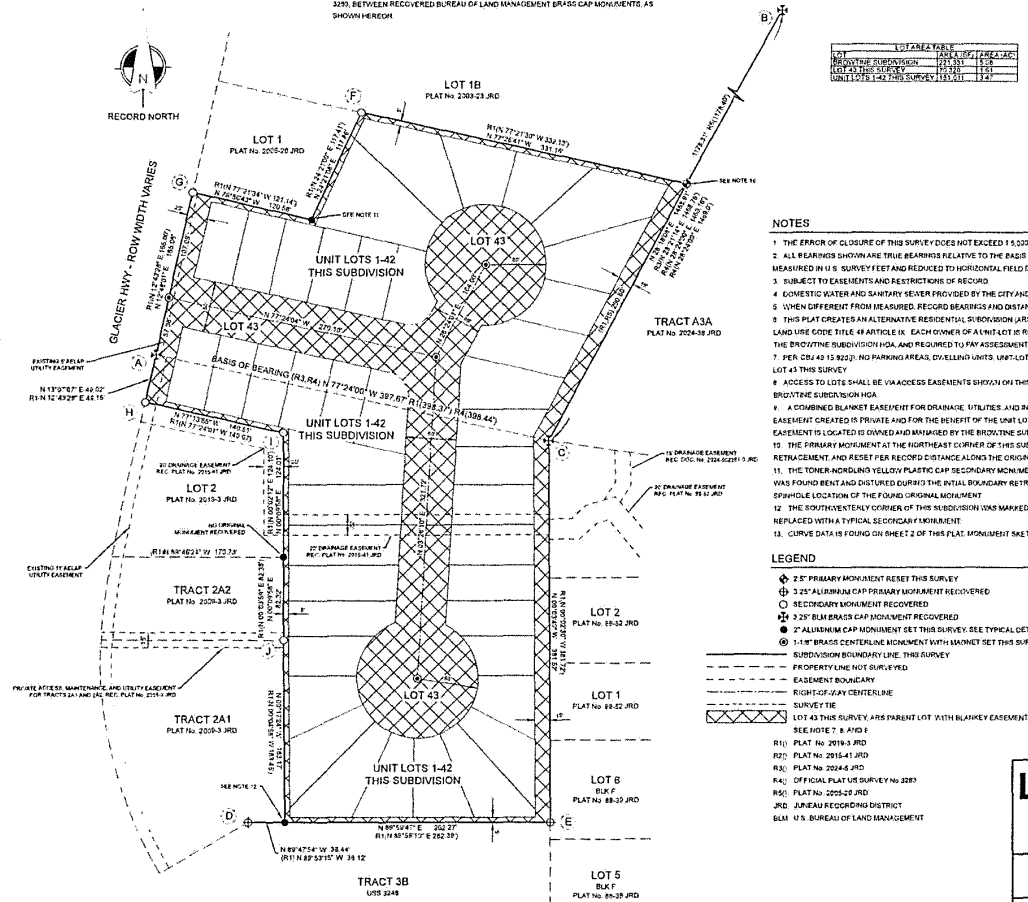
CITY & BOROUGH OF JUNEAU

ATTEST

MUNICIPAL CLERK
CITY AND BOROUGH OF JUNEAU

BASIS OF BEARING

THE BASIS OF BEARING FOR THIS PLAT IS THE RECORD BEARING OF N 77° 24' 00" W AS DELINEATED IN THE OFFICIAL PLAT OF ONE-HALF SECTION SUBDIVISION 1 RECORD PLAT No. 2015-41 JUNEAU RECORDING DISTRICT AND THE OFFICIAL PLATS OF U.S. SURVEYS No. 3248 AND No. 3249, BETWEEN RECOVERED BUREAU OF LAND MANAGEMENT BRASS CAP MONUMENTS, AS SHOWN HEREON.

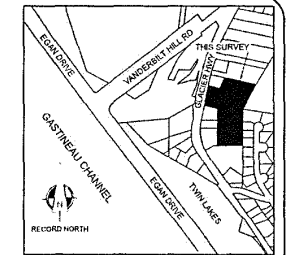


NOTES

1. THE ERROR OF CLOSURE OF THIS SURVEY DOES NOT EXCEED 15.000.
2. ALL BEARINGS SHOWN ARE TRUE BEARINGS RELATIVE TO THE BASIS OF BEARING, AS SHOWN HEREON. SURVEY COURSE DISTANCES SHOWN ARE MEASURED IN U.S. SURVEY FEET AND REDUCED TO HORIZONTAL FIELD DISTANCES.
3. SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.
4. DOMESTIC WATER AND SANITARY SEWER PROVIDED BY THE CITY AND BOROUGH OF JUNEAU PUBLIC UTILITIES.
5. WHEN DIFFERENT FROM MEASURED, RECORD BEARINGS AND DISTANCES ARE SHOWN IN PARENTHESES AND REFERENCED TO A RECORD PLAT, (R#).
6. THIS PLAT CREATES AN ALTERNATIVE RESIDENTIAL SUBDIVISION (RSD) PURSUANT TO AND GOVERNED BY THE CITY AND BOROUGH OF JUNEAU LAND USE CODE TITLE 4.0 ARTICLE 10. EACH OWNER OF A UNIT LOT IS REQUIRED TO MAINTAIN AND BE RESPONSIBLE FOR THE MAINTENANCE OF A MEMBER OF THE BROOKLYNE SUBDIVISION HOA, AND REQUIRED TO PAY ASSESSMENTS ASSESSED BY THE BROOKLYNE SUBDIVISION HOA.
7. PER DR 42 15 8223, NO PARKING AREAS, DWELLING UNITS, OR LOTS, ON PERMISSIBLE USES MAY BE LOCATED WITHIN THE AREA PARENT LOT, OR LOT 43 THIS SURVEY.
8. ACCESS TO LOTS SHALL BE VIA ACCESS EASEMENTS SHOWN ON THIS PLAT AND IS SUBJECT TO THE REQUIREMENTS IN THE PUBLICS OF THE BROOKLYNE SUBDIVISION HOA.
9. A COMBINED BLANKET EASEMENT FOR DRAINAGE, UTILITIES AND INGRESS AND EGRESS IS CREATED ACROSS LOT 43 AS SHOWN HEREON. THE EASEMENT IS CREATED IN PRIVATE AND FOR THE BENEFIT OF THE UNIT LOTS CREATED WITHIN THIS SUBDIVISION. THE LAND ON WHICH THE PRIVATE EASEMENT IS LOCATED IS OWNED AND MANAGED BY THE BROOKLYNE SUBDIVISION HOA.
10. THE PRIMARY MONUMENT AT THE NORTHEAST CORNER OF THIS SUBDIVISION WAS FOUND DISTURBED DURING THE INITIAL BOUNDARY RETRACEMENT AND RESET PER RECORD DISTANCE ALONG THE ORIGINAL U.S. SURVEY BOUNDARY.
11. THE TONER-NORDBOLD YELLOW PLASTIC CAP SECONDARY MONUMENT RECOVERED ALONG THE NORTHERLY BOUNDARY OF THIS SUBDIVISION WAS FOUND BENT AND DISTURBED DURING THE INITIAL BOUNDARY RETRACEMENT AND RESET WITH A TYPICAL SECONDARY MONUMENT AT THE SPRAHLE LOCATION OF THE FOUND ORIGINAL MONUMENT.
12. THE SOUTHWESTERLY CORNER OF THIS SUBDIVISION WAS MARKED WITH A 2" REBAR WITH NO CAP. THE LOCATION OF THE REBAR WAS FIELD AND REPLACED WITH A TYPICAL SECONDARY MONUMENT.
13. CURVE DATA IS FOUND ON SHEET 2 OF THIS PLAT. MONUMENT SKETCH DETAILS ARE FOUND ON SHEET 3 OF THIS PLAT.

LEGEND

- 2" PRIMARY MONUMENT RESET THIS SURVEY
- 3" 2" ALUMINUM CAP PRIMARY MONUMENT RECOVERED
- 3" 2" RECOVERED MONUMENT RECOVERED
- 3" 2" BLU BRASS CAP MONUMENT RECOVERED
- 2" ALUMINUM CAP MONUMENT SET THIS SURVEY. SEE TYPICAL DETAIL.
- 1" 1" BRASS CENTERLINE MONUMENT WITH MONUMENT SET THIS SURVEY
- SUBDIVISION BOUNDARY LINE, THIS SURVEY
- PROPERTY LINE NOT SURVEYED
- EASEMENT BOUNDARY
- RIGHT-OF-WAY CENTERLINE
- SURVEY LINE
- LOT 43 THIS SURVEY IS PARENT LOT WITH BLANKET EASEMENT.
- SEE NOTE 7, 8, AND 9.
- R1: PLAT No. 2019-3 JRD
- R2: PLAT No. 2018-41 JRD
- R3: PLAT No. 2024-6 JRD
- R4: OFFICIAL PLAT U.S. SURVEY No. 3248
- R5: PLAT No. 2025-28 JRD
- JRD: JUNEAU RECORDING DISTRICT
- BLM: U.S. BUREAU OF LAND MANAGEMENT



VICINITY MAP - JUNEAU, ALASKA
SOURCE: CITY AND BOROUGH OF JUNEAU GIS
NOT TO SCALE

LAST FRONTIER SURVEYING & ENGINEERING LLC

SURVEYOR: ALEX VENECHKIN, PLS
NO. 6024-2024
JUNEAU, AK 99801

OWNER: MITY SEA CHARTERS & LOGGING LLC
AND RAS CONSTRUCTION, LLC
PO BOX 210 34
JUNEAU, AK 99801

A PLAT OF
BROOKLYNE SUBDIVISION
A SUBDIVISION OF
LOT 1 BAYVIEW SUBDIVISION
AS SHOWN ON RECORD PLAT 2019-3 JUNEAU RECORDING DISTRICT
WITHIN U.S. SURVEY No. 3248 AND U.S. SURVEY No. 3249
STATE RECORDERS OFFICE AT ANCHORAGE, AK
WITHIN THE CITY AND BOROUGH OF JUNEAU, ALASKA
CRJ CASE NO. AMP 2024-0001

DRAWN BY: AMJ DATE: 03/24/2025 SHEET 1 OF 3

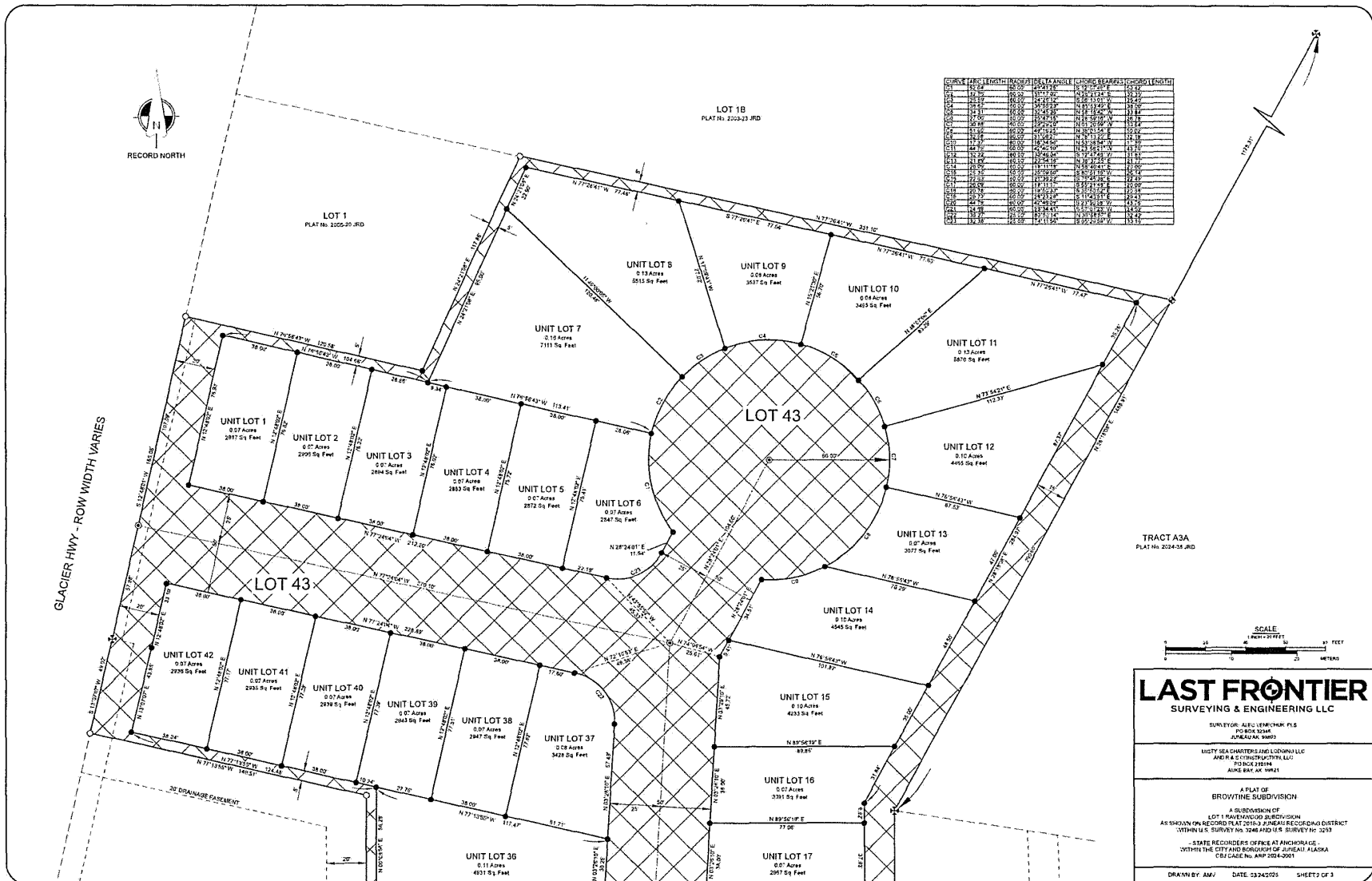


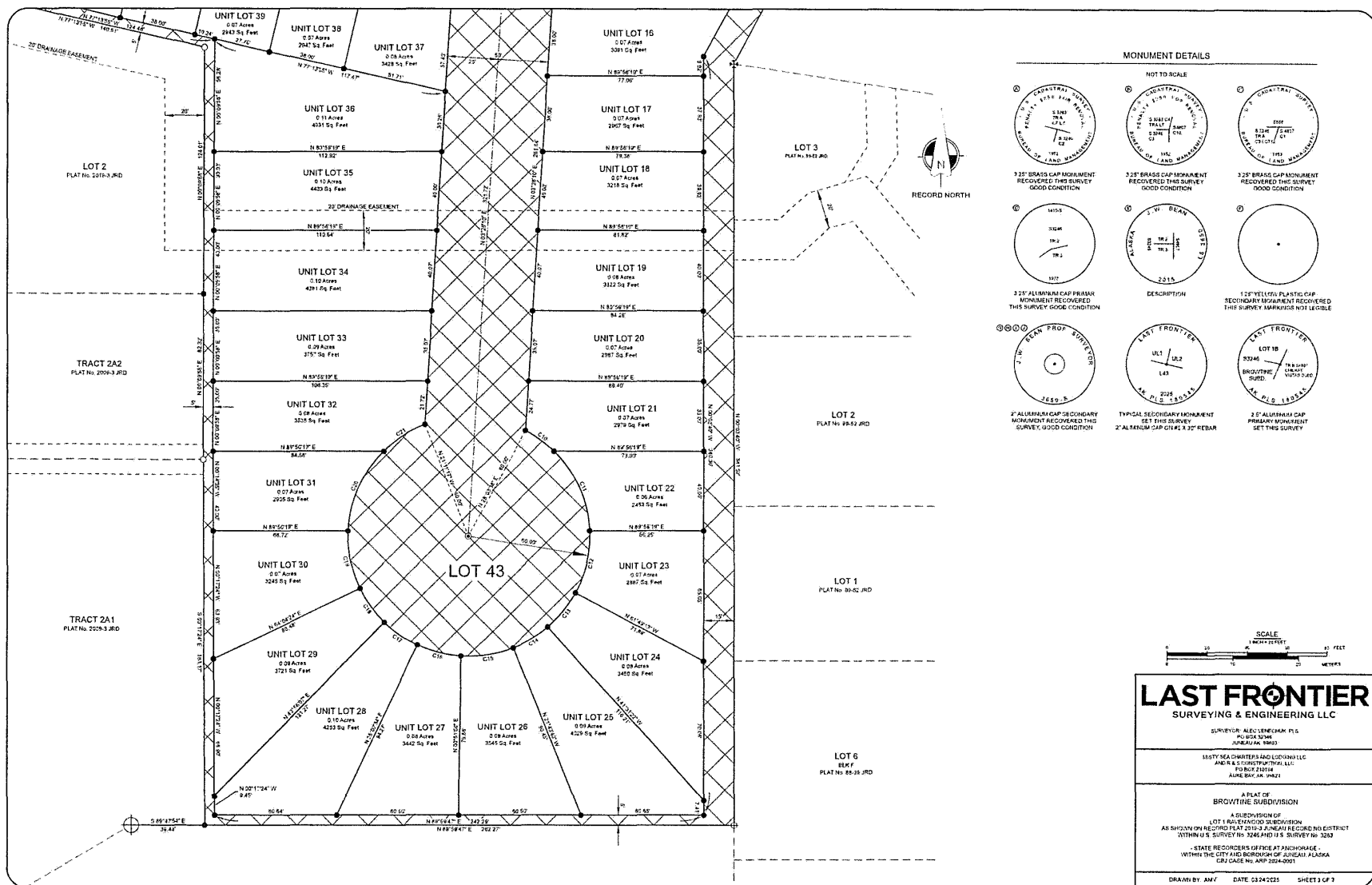
SURVEYOR'S CERTIFICATE

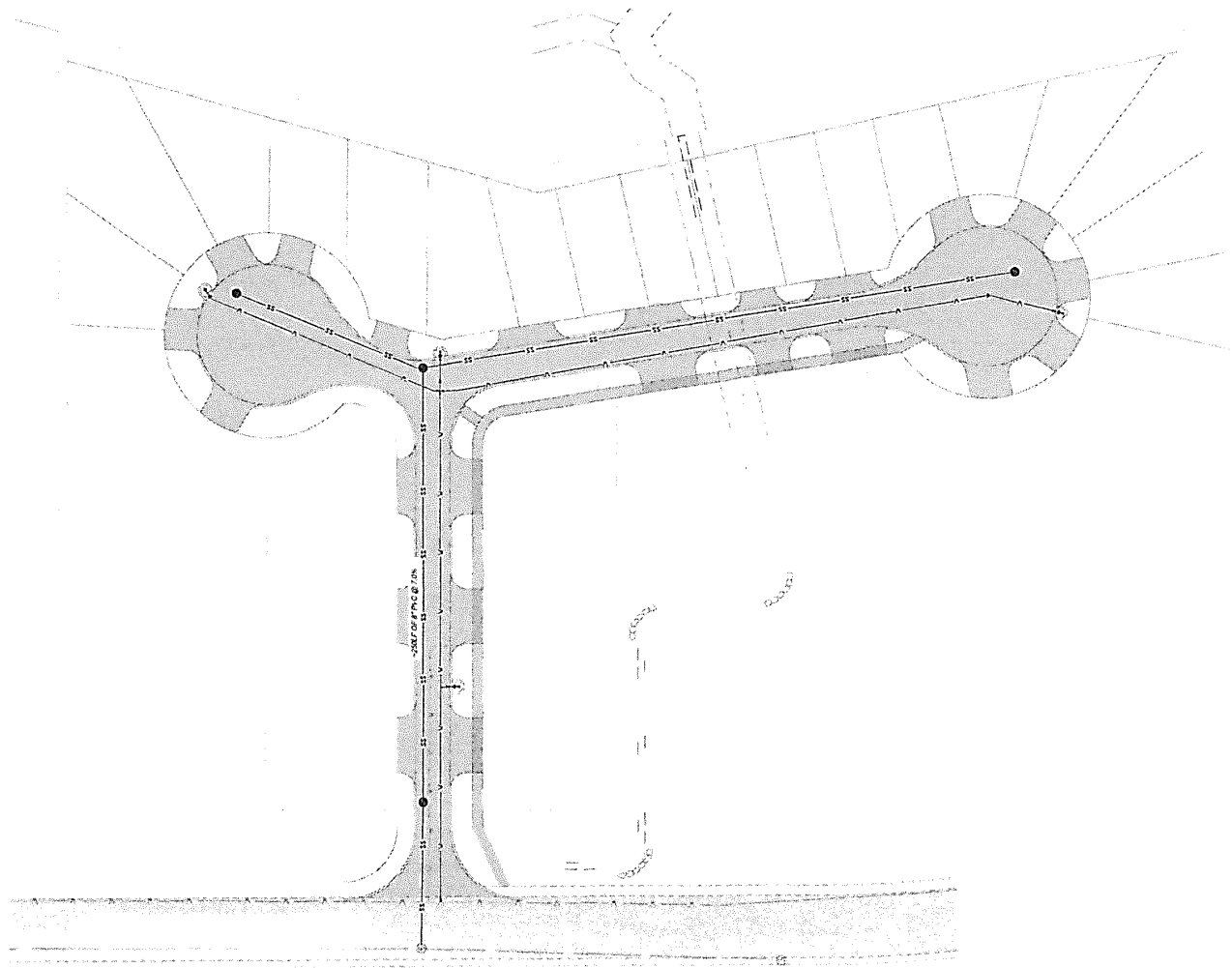
I, ALEX VENECHKIN, IN MY CAPACITY AS A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA, CERTIFY THAT THIS PLAT REPRESENTS THE SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, THAT THE ACCURACY OF THE SURVEY IS WITHIN THE LIMITS REQUIRED BY TITLE 4.0 OF THE CODE OF THE CITY AND BOROUGH OF JUNEAU, THAT ALL DIMENSIONS AND RELATIVE BEARINGS ARE CORRECT, AND THAT MONUMENTS WERE SET IN PLACE AND NOTED UPON THIS PLAT AS PRESENTED.

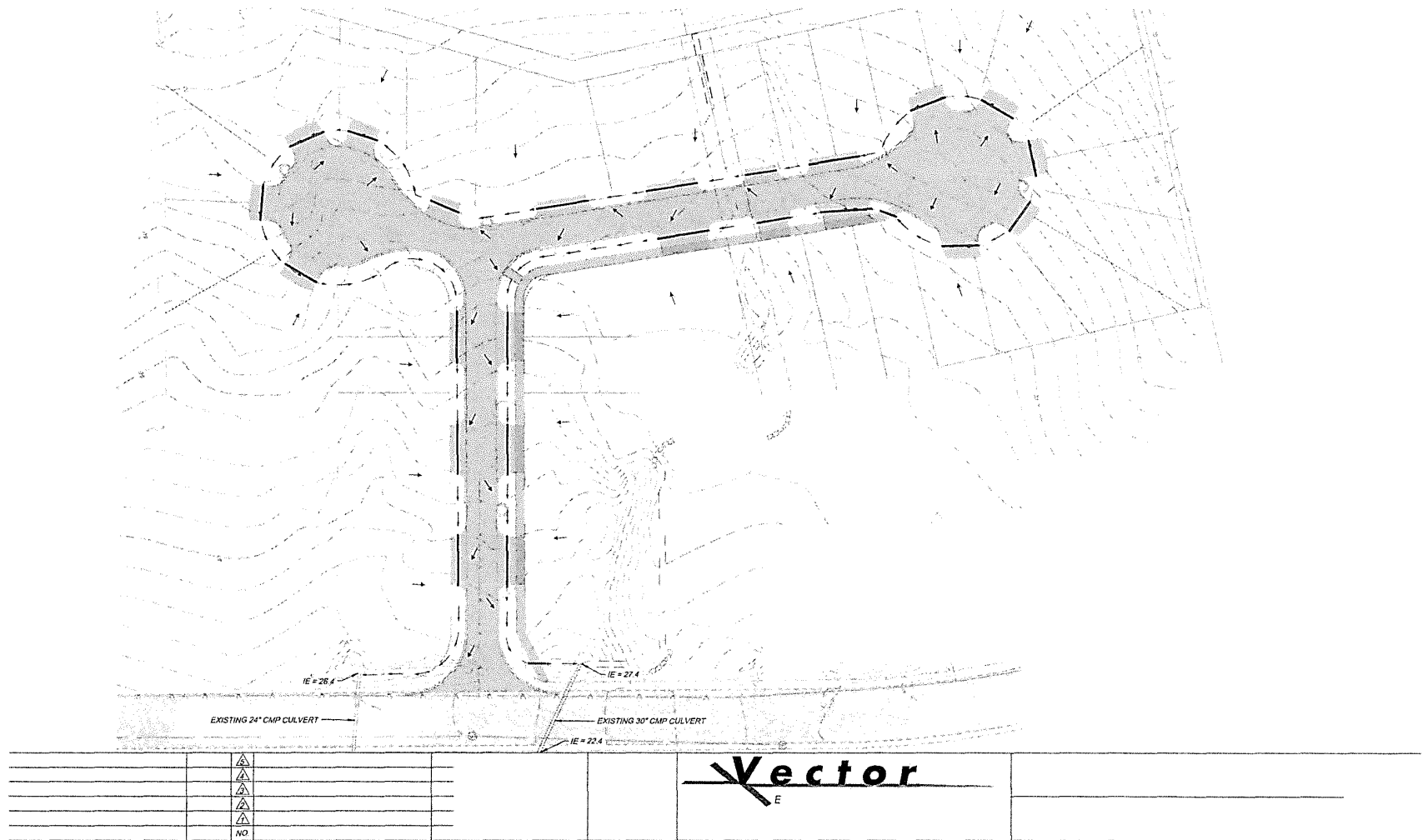
ALEX VENECHKIN, ALASKA PROFESSIONAL LAND SURVEYOR No. 193548

DATE _____









SUBDIVISION OWNERSHIP CERTIFICATE

I, CERTIFY THAT MISTY SEA CHARTERS & LODGING LLC, AN ALASKA LIMITED LIABILITY COMPANY, IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I, AS MANAGING MEMBER OF MISTY SEA LODGING AND CHARTERS LLC, HAVING THE AUTHORITY TO DO SO, HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO THE PUBLIC OR PRIVATE USE AS NOTED.

NAME: _____ DATE: _____, 2025

SIGNATURE _____

NOTARY ACKNOWLEDGEMENT

UNITED STATES OF AMERICA)

STATE OF ALASKA)

THIS IS TO CERTIFY THAT ON THE _____ DAY OF _____, 2025, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____ TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE ABOVE AND FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/SHE SIGNED AND SEALED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN MENTIONED. WITNESS MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

NOTARY PUBLIC FOR ALASKA _____

MY COMMISSION EXPIRES _____

SUBDIVISION OWNERSHIP CERTIFICATE

I, CERTIFY THAT R&S CONSTRUCTION, LLC, AN ALASKA LIMITED LIABILITY COMPANY, IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I, AS MANAGING MEMBER OF R&S CONSTRUCTION, LLC, HAVING THE AUTHORITY TO DO SO, HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO THE PUBLIC OR PRIVATE USE AS NOTED.

NAME: _____ DATE: _____, 2025

SIGNATURE _____

NOTARY ACKNOWLEDGEMENT

UNITED STATES OF AMERICA)

STATE OF ALASKA)

THIS IS TO CERTIFY THAT ON THE _____ DAY OF _____, 2025, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____ TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE ABOVE AND FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/SHE SIGNED AND SEALED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN MENTIONED. WITNESS MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

NOTARY PUBLIC FOR ALASKA _____

MY COMMISSION EXPIRES _____

PLANNING COMMISSION PLAT APPROVAL

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF JUNEAU, ALASKA AND THAT THIS PLAT HAS BEEN APPROVED BY THE PLANNING COMMISSION BY PLAT RESOLUTION No. _____ DATED _____, 2025, AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE JUNEAU RECORDING DISTRICT OFFICE, LOCATED IN ANCHORAGE, ALASKA.

_____, DATE _____, 2025

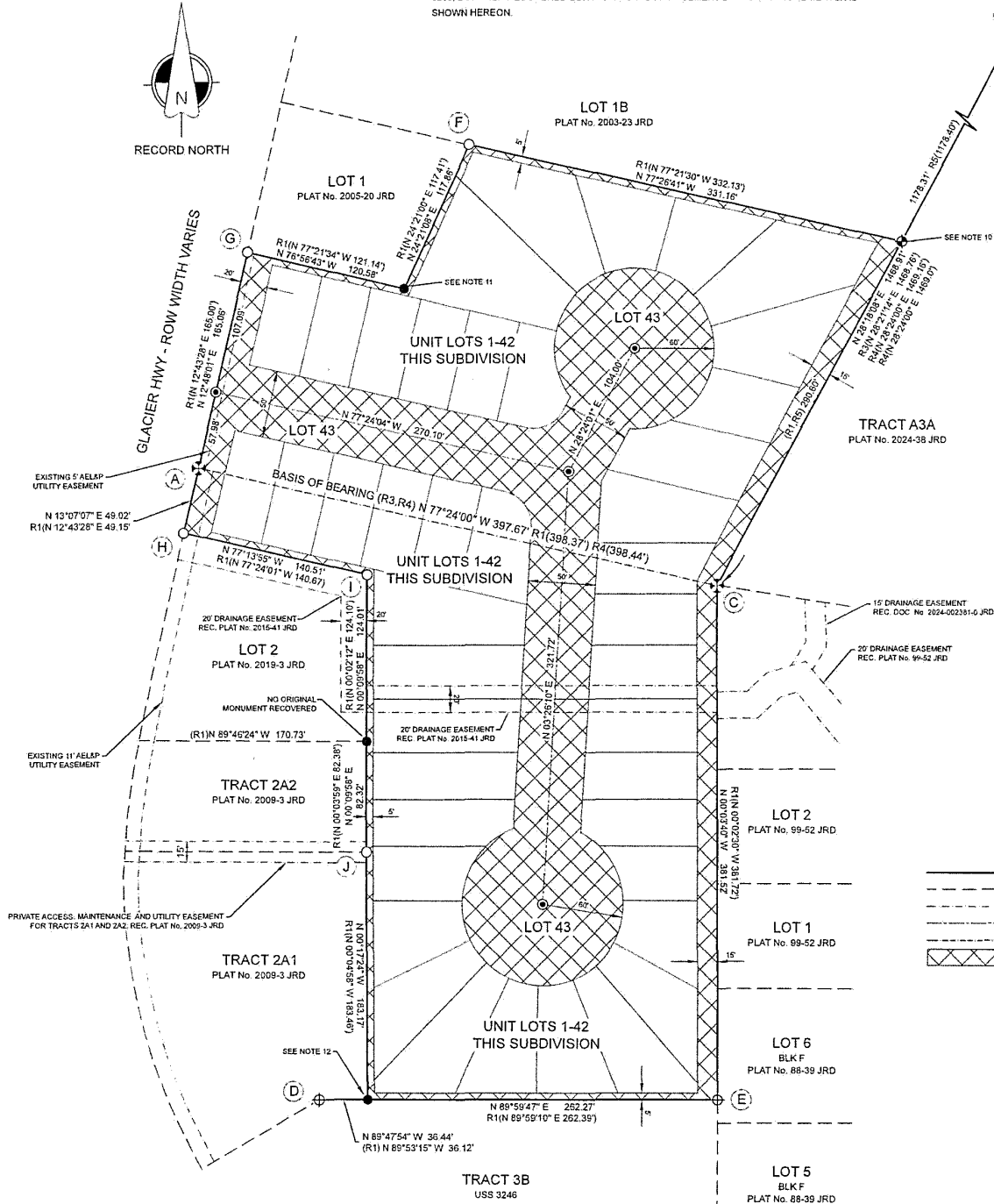
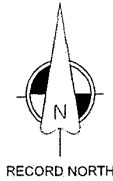
CHAIRPERSON OF THE PLANNING COMMISSION
CITY & BOROUGH OF JUNEAU

ATTEST:

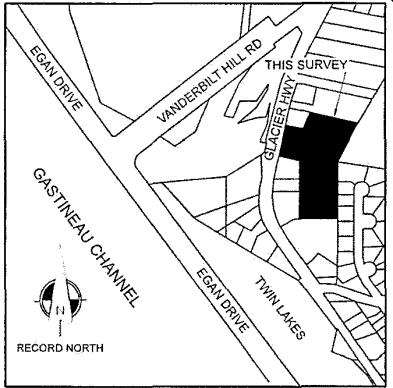
MUNICIPAL CLERK
CITY AND BOROUGH OF JUNEAU

BASIS OF BEARING

THE BASIS OF BEARING FOR THIS PLAT IS THE RECORD BEARING OF N 77° 24' 00" W, AS DELINEATED IN THE OFFICIAL PLAT OF CHILKAT VIEW SUBDIVISION II, RECORD PLAT No. 2015-41 JUNEAU RECORDING DISTRICT, AND THE OFFICIAL PLATS OF U.S. SURVEYS No. 3246 AND No. 3253, BETWEEN RECOVERED BUREAU OF LAND MANAGEMENT BRASS CAP MONUMENTS, AS SHOWN HEREON.



LOT AREA TABLE		
LOT	AREA (SF)	AREA (AC)
BROWTINE SUBDIVISION	221,331	5.08
LOT 43 THIS SURVEY	70,329	1.61
UNIT LOTS 1-42 THIS SURVEY	151,011	3.47



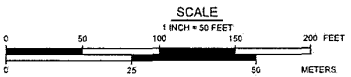
VICINITY MAP - JUNEAU, ALASKA
SOURCE: CITY AND BOROUGH OF JUNEAU GIS
NOT TO SCALE

NOTES

1. THE ERROR OF CLOSURE OF THIS SURVEY DOES NOT EXCEED 1:5,000.
2. ALL BEARINGS SHOWN ARE TRUE BEARINGS RELATIVE TO THE BASIS OF BEARING, AS SHOWN HEREON. SURVEY COURSE DISTANCES SHOWN ARE MEASURED IN U.S. SURVEY FEET AND REDUCED TO HORIZONTAL FIELD DISTANCES.
3. SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.
4. DOMESTIC WATER AND SANITARY SEWER PROVIDED BY THE CITY AND BOROUGH OF JUNEAU PUBLIC UTILITIES.
5. WHEN DIFFERENT FROM MEASURED, RECORD BEARINGS AND DISTANCES ARE SHOWN IN PARENTHESIS AND REFERENCED TO A RECORD PLAT (R#).
6. THIS PLAT CREATES AN ALTERNATIVE RESIDENTIAL SUBDIVISION (ARS) PURSUANT TO AND GOVERNED BY THE CITY AND BOROUGH OF JUNEAU LAND USE CODE TITLE 49 ARTICLE IX. EACH OWNER OF A UNIT-LOT IS REQUIRED TO, AND SHALL BE, THROUGHOUT THEIR OWNERSHIP, A MEMBER OF THE BROWTINE SUBDIVISION HOA, AND REQUIRED TO PAY ASSESSMENTS ASSESSED BY THE BROWTINE SUBDIVISION HOA.
7. PER CBJ 49.15.920(j), NO PARKING AREAS, DWELLING UNITS, UNIT-LOTS, OR PERMISSIBLE USES MAY BE LOCATED WITHIN THE ARS PARENT LOT, OR LOT 43 THIS SURVEY.
8. ACCESS TO LOTS SHALL BE VIA ACCESS EASEMENTS SHOWN ON THIS PLAT AND IS SUBJECT TO THE REQUIREMENTS IN THE BYLAWS OF THE BROWTINE SUBDIVISION HOA.
9. A COMBINED BLANKET EASEMENT FOR DRAINAGE, UTILITIES, AND INGRESS AND EGRESS IS CREATED ACROSS LOT 43, AS SHOWN HEREON. THE EASEMENT CREATED IS PRIVATE AND FOR THE BENEFIT OF THE UNIT LOTS CREATED WITH THIS SUBDIVISION. THE LAND ON WHICH THE PRIVATE EASEMENT IS LOCATED IS OWNED AND MANAGED BY THE BROWTINE SUBDIVISION HOA.
10. THE PRIMARY MONUMENT AT THE NORTHEAST CORNER OF THIS SUBDIVISION WAS FOUND DISTURBED DURING THE INITIAL BOUNDARY RETRACEMENT, AND RESET PER RECORD DISTANCE ALONG THE ORIGINAL U.S. SURVEY BOUNDARY.
11. THE TONER-NORDLING YELLOW PLASTIC CAP SECONDARY MONUMENT RECOVERED ALONG THE NORTHERLY BOUNDARY OF THIS SUBDIVISION WAS FOUND BENT AND DISTURBED DURING THE INITIAL BOUNDARY RETRACEMENT, AND RESET WITH A TYPICAL SECONDARY MONUMENT AT THE SPINHOLE LOCATION OF THE FOUND ORIGINAL MONUMENT.
12. THE SOUTHWESTERLY CORNER OF THIS SUBDIVISION WAS MARKED WITH A #5 REBAR WITH NO CAP. THE LOCATION OF THE REBAR WAS HELD AND REPLACED WITH A TYPICAL SECONDARY MONUMENT.
13. CURVE DATA IS FOUND ON SHEET 2 OF THIS PLAT. MONUMENT SKETCH DETAILS ARE FOUND ON SHEET 3 OF THIS PLAT.

LEGEND

- 2.5" PRIMARY MONUMENT RESET THIS SURVEY
- 3.25" ALUMINUM CAP PRIMARY MONUMENT RECOVERED
- SECONDARY MONUMENT RECOVERED
- 2.5" BLM BRASS CAP MONUMENT RECOVERED
- 2" ALUMINUM CAP MONUMENT SET THIS SURVEY, SEE TYPICAL DETAIL
- 1-1/8" BRASS CENTERLINE MONUMENT WITH MAGNET SET THIS SURVEY
- SUBDIVISION BOUNDARY LINE, THIS SURVEY
- PROPERTY LINE NOT SURVEYED
- EASEMENT BOUNDARY
- RIGHT-OF-WAY CENTERLINE
- SURVEY TIE
- LOT 43 THIS SURVEY, ARS PARENT LOT, WITH BLANKET EASEMENT, SEE NOTE 7, 8, AND 9
- R1() PLAT No. 2019-3 JRD
- R2() PLAT No. 2015-41 JRD
- R3() PLAT No. 2024-5 JRD
- R4() OFFICIAL PLAT US SURVEY No. 3263
- R5() PLAT No. 2005-20 JRD
- JRD JUNEAU RECORDING DISTRICT
- BLM U.S. BUREAU OF LAND MANAGEMENT



LAST FRONTIER
SURVEYING & ENGINEERING LLC

SURVEYOR: ALEC VENECHUK, PLS
PO BOX 32346
JUNEAU AK 99803

OWNERS: MISTY SEA CHARTERS AND LODGING LLC
AND R & S CONSTRUCTION, LLC
PO BOX 210194
AUKIE BAY, AK 99821

A PLAT OF
BROWTINE SUBDIVISION

A SUBDIVISION OF
LOT 1 RAVENWOOD SUBDIVISION
AS SHOWN ON RECORD PLAT 2019-3 JUNEAU RECORDING DISTRICT
WITHIN U.S. SURVEY No. 3246 AND U.S. SURVEY No. 3253

STATE RECORDERS OFFICE AT ANCHORAGE -
WITHIN THE CITY AND BOROUGH OF JUNEAU, ALASKA
CBJ CASE No. ARP 2024-0001

DRAWN BY: AMV DATE: 03/24/2025 SHEET 1 OF 3

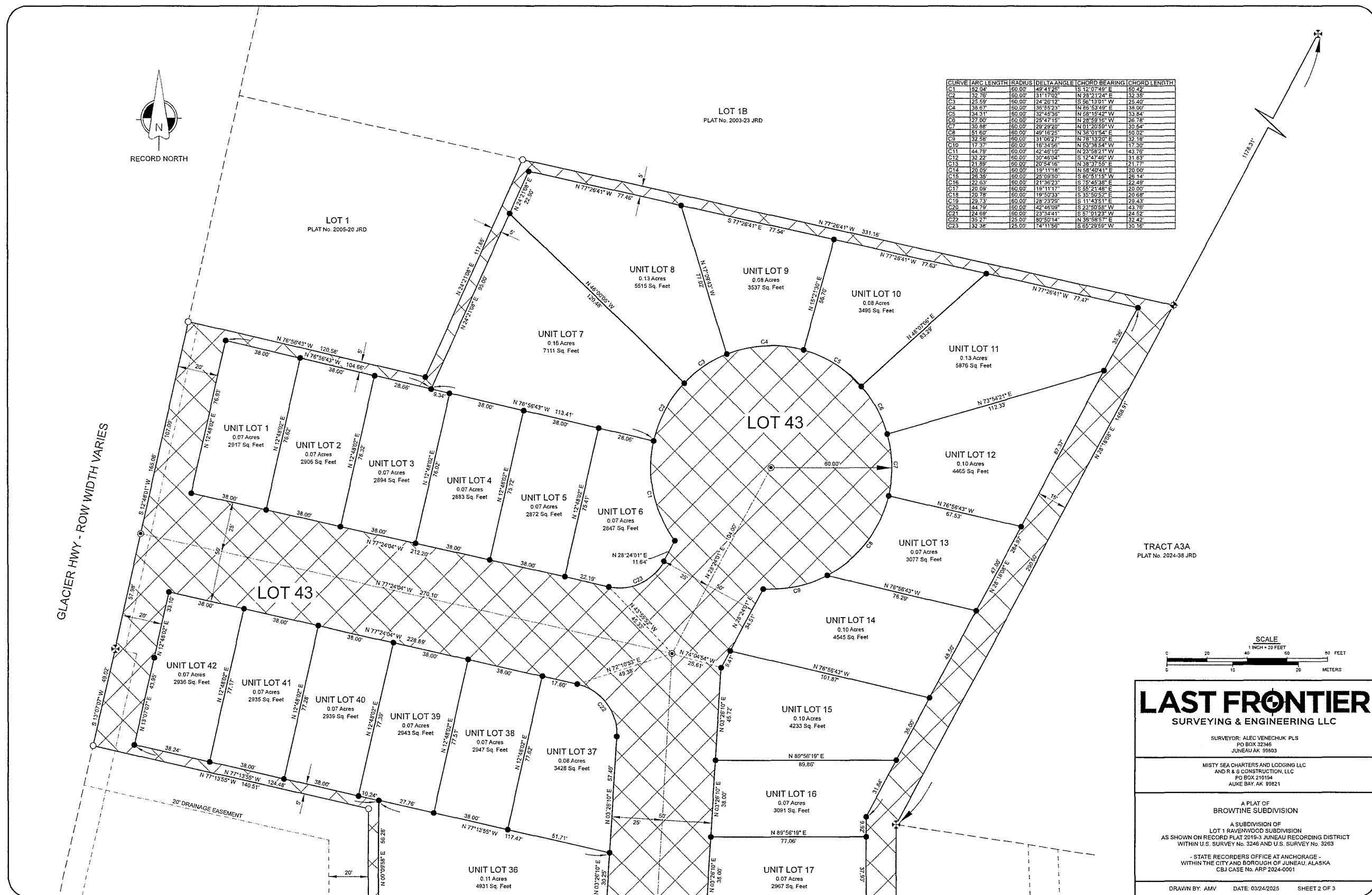
SURVEYOR'S CERTIFICATE

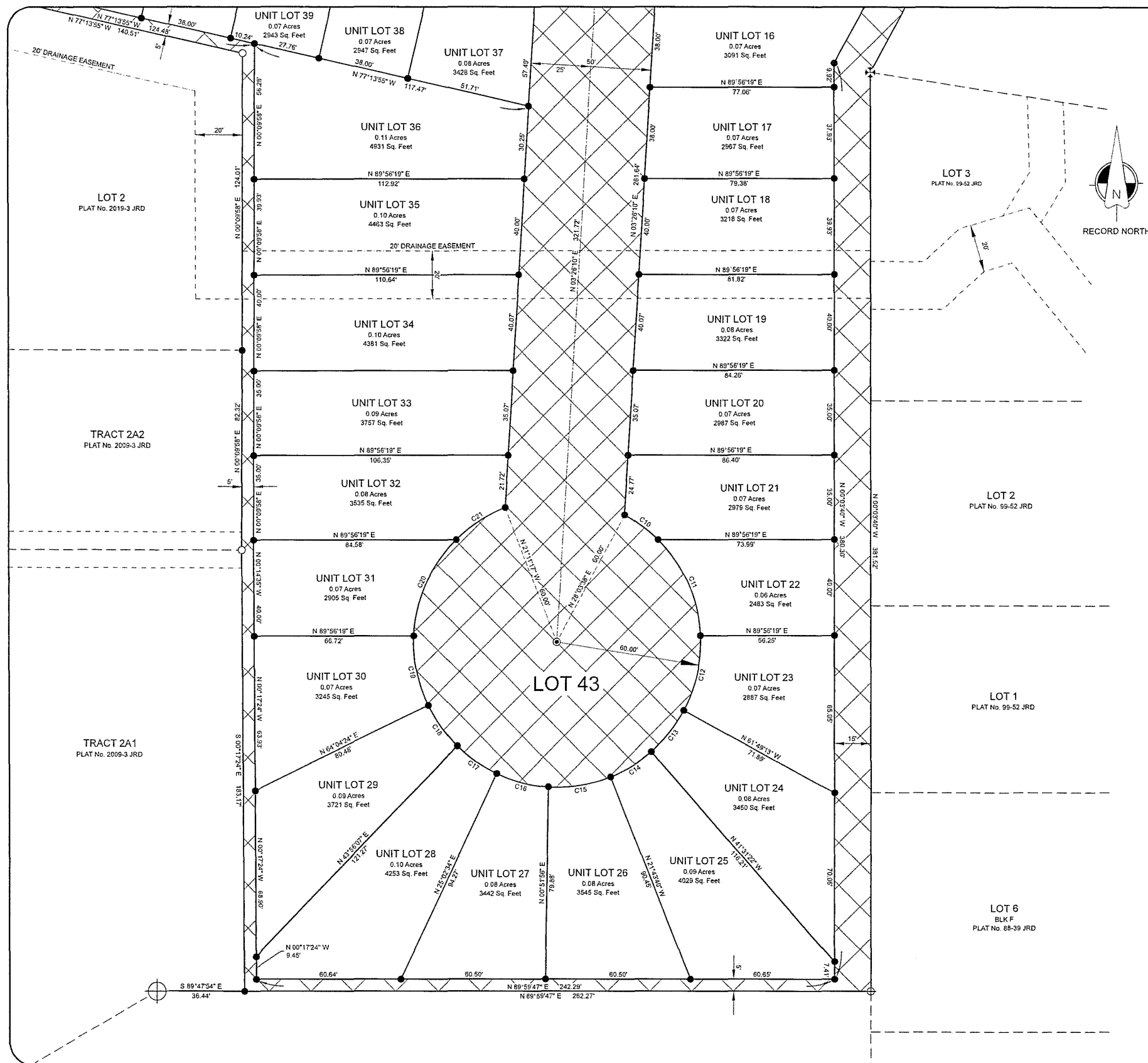
I, ALEC VENECHUK, IN MY CAPACITY AS A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA, CERTIFY THAT THIS PLAT REPRESENTS THE SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, THAT THE ACCURACY OF THE SURVEY IS WITHIN THE LIMITS REQUIRED BY TITLE 49 OF THE CODE OF THE CITY AND BOROUGH OF JUNEAU, THAT ALL DIMENSIONS AND RELATIVE BEARINGS ARE CORRECT, AND THAT MONUMENTS ARE SET IN PLACE AND NOTED UPON THIS PLAT AS PRESENTED.

ALEC M VENECHUK, ALASKA PROFESSIONAL LAND SURVEYOR No. 180545

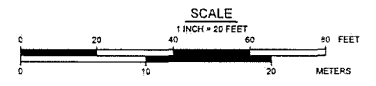
DATE: _____







MONUMENT DETAILS		
NOT TO SCALE		
325" BRASS CAP MONUMENT RECOVERED THIS SURVEY GOOD CONDITION	325" BRASS CAP MONUMENT RECOVERED THIS SURVEY GOOD CONDITION	325" BRASS CAP MONUMENT RECOVERED THIS SURVEY GOOD CONDITION
325" ALUMINUM CAP PRIMAR MONUMENT RECOVERED THIS SURVEY GOOD CONDITION	DESCRIPTION	125" YELLOW PLASTIC CAP SECONDARY MONUMENT RECOVERED THIS SURVEY, MARKINGS NOT LEGIBLE
2" ALUMINUM CAP SECONDARY MONUMENT RECOVERED THIS SURVEY GOOD CONDITION	TYPICAL SECONDARY MONUMENT SET THIS SURVEY 2" ALUMINUM CAP ON #5 X 36" REBAR	2.5" ALUMINUM CAP PRIMARY MONUMENT SET THIS SURVEY



LAST FRONTIER
 SURVEYING & ENGINEERING LLC
 SURVEYOR: ALEC VENECHUK PLS
 PO BOX 32346
 JUNEAU AK 99803

MISTY SEA CHARTERS AND LODGING LLC
 AND R & S CONSTRUCTION, LLC
 PO BOX 210194
 AUKU BAY, AK 99821

A PLAT OF
 BROWTINE SUBDIVISION
 A SUBDIVISION OF
 LOT 1 RAVENWOOD SUBDIVISION
 AS SHOWN ON RECORD PLAT 2019-3 JUNEAU RECORDING DISTRICT
 WITHIN U.S. SURVEY No. 3246 AND U.S. SURVEY No. 3253
 - STATE RECORDERS OFFICE AT ANCHORAGE -
 WITHIN THE CITY AND BOROUGH OF JUNEAU, ALASKA
 CBJ CASE No. ARP 2024-0001

DRAWN BY: AMV DATE: 03/24/2025 SHEET 3 OF 3

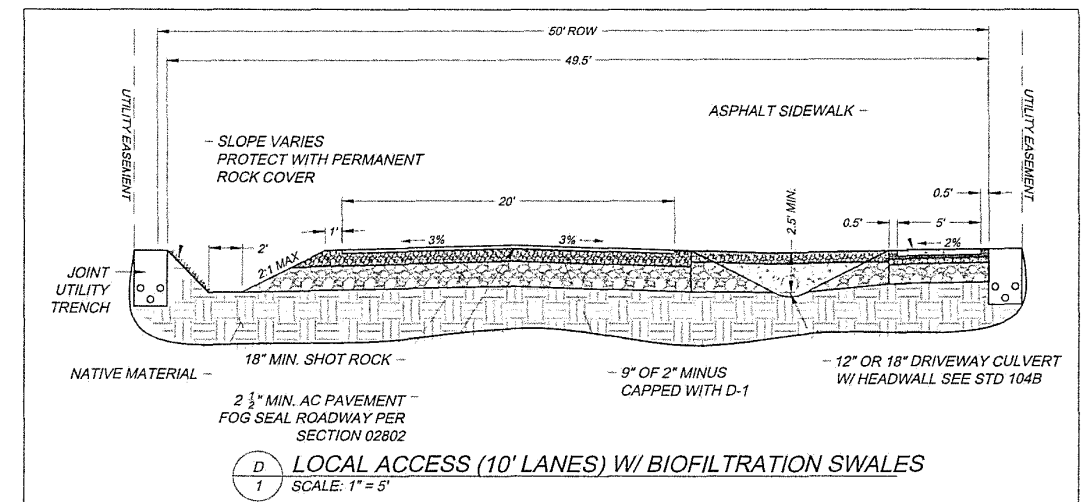
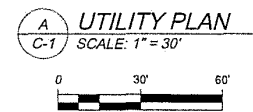
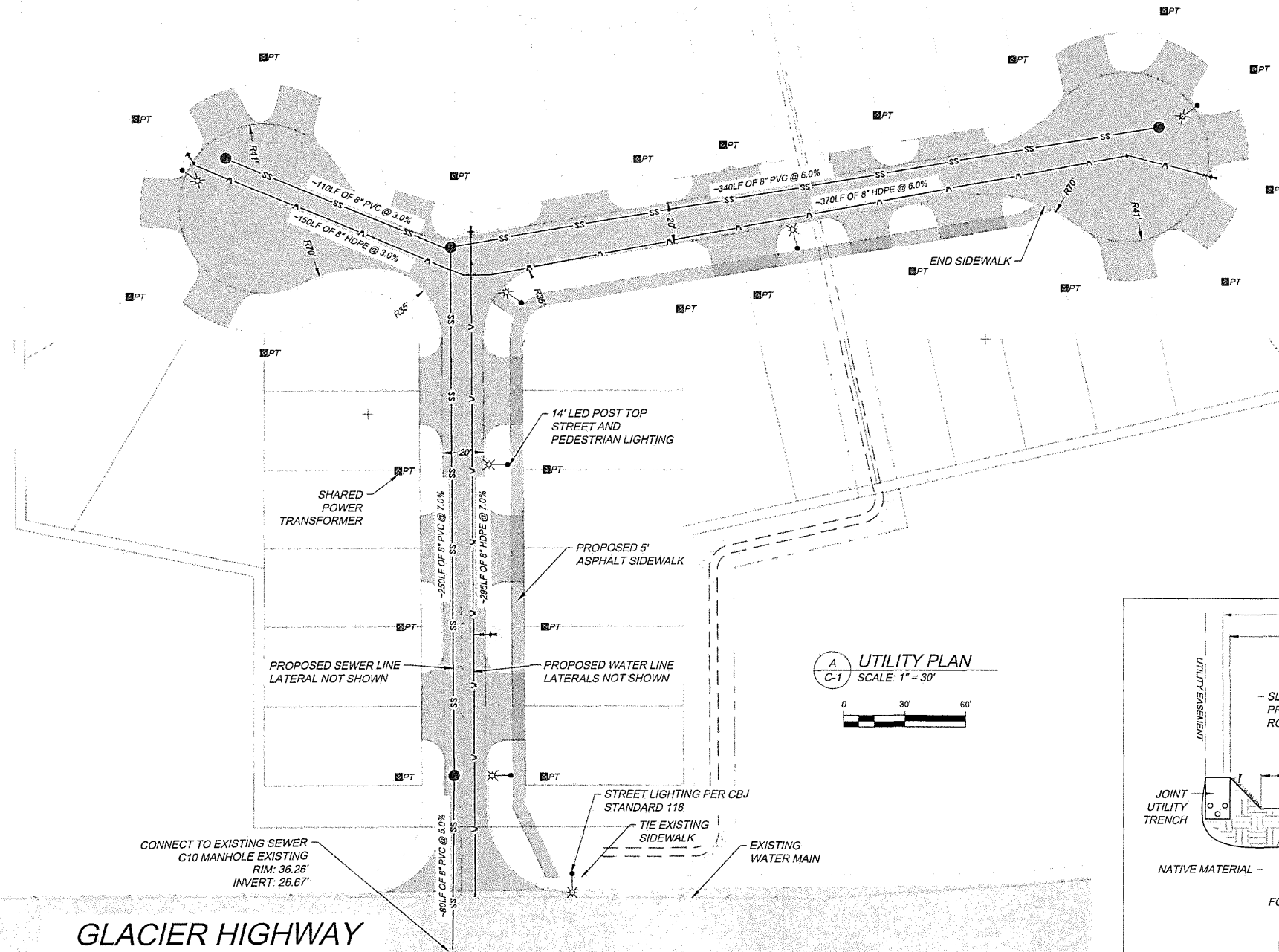
BROWTINE SUBDIVISION

4670 GLACIER HWY

JUNEAU, AK

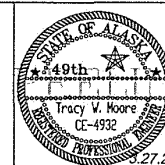
LEGEND

- EXISTING CREEK
- EXISTING SEWER LINE
- EXISTING WATER LINE
- SS --- PROPOSED 8" PVC SEWER LINE
- W --- PROPOSED 8" HDPE WATER LINE
- ⊙ EXISTING SEWER MANHOLE
- ⊙ PROPOSED SEWER MANHOLE
- ⊙ PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- ⊙ PT PROPOSED POWER TRANSFORMER
- ⊙ PT PROPOSED STREET LIGHTING



FILE: ARS Preliminary Plan - 3.27.25.dwg	5			
PROJECT: RAVENSWOOD	4			
CHECKED BY: TWM	3			
DETAILED BY: KML	2			
DESIGNED BY: KML	1			
DATE	NO.	REVISION	BY	

PRELIMINARY

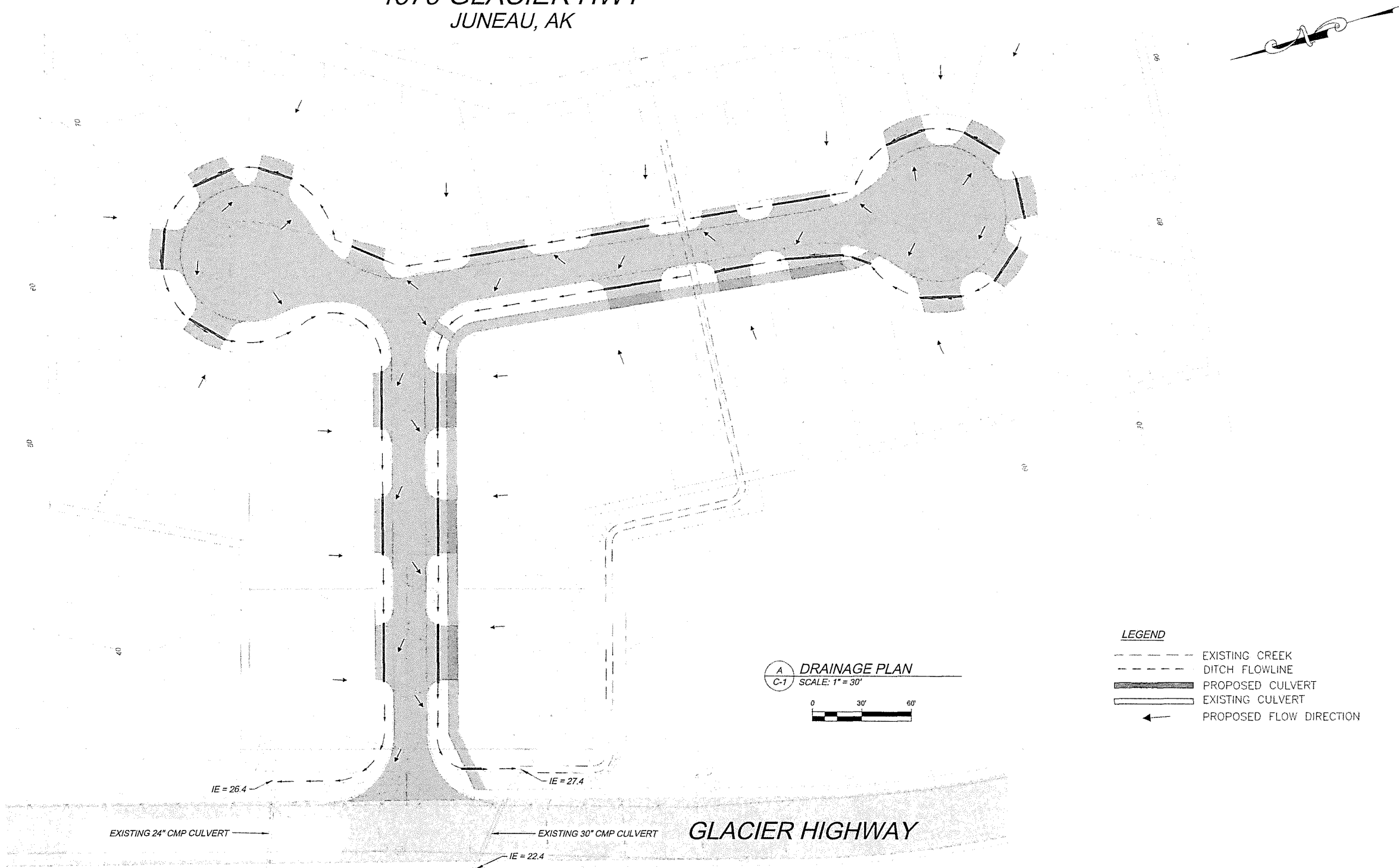


Vector
ENGINEERING INC.
2724 Black Lake Boulevard SW Suite 202
Tumwater, WA 98512
ph: (360) 352-2477 fax: (360) 352-0179 E-mail: admin@vectorengineeringinc.com

BROWTINE SUBDIVISION
ALTERNATE RESIDENTIAL SUBDIVISION
JUNEAU, ALASKA
SMP SUBMITTAL

C-1
PRELIMINARY
UTILITY PLAN
SHT 1 OF 2

BROWTINE SUBDIVISION
4670 GLACIER HWY
JUNEAU, AK



- LEGEND**
- EXISTING CREEK
 - DITCH FLOWLINE
 - PROPOSED CULVERT
 - EXISTING CULVERT
 - PROPOSED FLOW DIRECTION

DRAINAGE PLAN
SCALE: 1" = 30'

FILE: ARS Preliminary Plan - 3.27.25.dwg		5		PRELIMINARY 	Vector ENGINEERING INC. 2724 Black Lake Boulevard SW Suite 202 Tumwater, WA 98512 ph: (360) 352-2477 fax: (360) 352-0179 E-mail: admin@vectorengineeringinc.com	BROWTINE SUBDIVISION ALTERNATE RESIDENTIAL SUBDIVISION JUNEAU, ALASKA		C-2
PROJECT: RAVENSWOOD		4				SMP SUBMITTAL		PRELIMINARY DRAINAGE PLAN
CHECKED BY: TWM		3				---		SHT 2 OF 2
DETAILED BY: KML		2				---		
DESIGNED BY: KML		1				---		
DATE	NO.	REVISION	BY					

SUBDIVISION OWNERSHIP CERTIFICATE

I, CERTIFY THAT MISTY SEA CHARTERS & LODGING LLC, AN ALASKA LIMITED LIABILITY COMPANY, IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I, AS MANAGING MEMBER OF MISTY SEA LODGING AND CHARTERS LLC, HAVING THE AUTHORITY TO DO SO, HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO THE PUBLIC OR PRIVATE USE AS NOTED.

NAME: _____ DATE: _____, 2025

SIGNATURE _____

NOTARY ACKNOWLEDGEMENT

UNITED STATES OF AMERICA)

) SS

STATE OF ALASKA)

THIS IS TO CERTIFY THAT ON THE _____ DAY OF _____, 2025, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____, TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE ABOVE AND FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/SHE SIGNED AND SEALED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN MENTIONED. WITNESS MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

NOTARY PUBLIC FOR ALASKA _____

MY COMMISSION EXPIRES _____

SUBDIVISION OWNERSHIP CERTIFICATE

I, CERTIFY THAT R&S CONSTRUCTION, LLC, AN ALASKA LIMITED LIABILITY COMPANY, IS THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I, AS MANAGING MEMBER OF R&S CONSTRUCTION, LLC, HAVING THE AUTHORITY TO DO SO, HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY FREE CONSENT AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO THE PUBLIC OR PRIVATE USE AS NOTED.

NAME: _____ DATE: _____, 2025

SIGNATURE _____

NOTARY ACKNOWLEDGEMENT

UNITED STATES OF AMERICA)

) SS

STATE OF ALASKA)

THIS IS TO CERTIFY THAT ON THE _____ DAY OF _____, 2025, BEFORE ME, THE UNDERSIGNED A NOTARY PUBLIC IN AND FOR THE STATE OF ALASKA, DULY COMMISSIONED AND SWORN, PERSONALLY APPEARED _____, TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE ABOVE AND FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE/SHE SIGNED AND SEALED THE SAME FREELY AND VOLUNTARILY FOR THE USES AND PURPOSES THEREIN MENTIONED. WITNESS MY HAND AND OFFICIAL SEAL THE DAY AND YEAR IN THIS CERTIFICATE FIRST ABOVE WRITTEN.

NOTARY PUBLIC FOR ALASKA _____

MY COMMISSION EXPIRES _____

PLANNING COMMISSION PLAT APPROVAL

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF JUNEAU, ALASKA AND THAT THIS PLAT HAS BEEN APPROVED BY THE PLANNING COMMISSION BY PLAT RESOLUTION No. _____, DATED _____, 2025, AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE JUNEAU RECORDING DISTRICT OFFICE, LOCATED IN ANCHORAGE, ALASKA.

_____, DATE _____, 2025

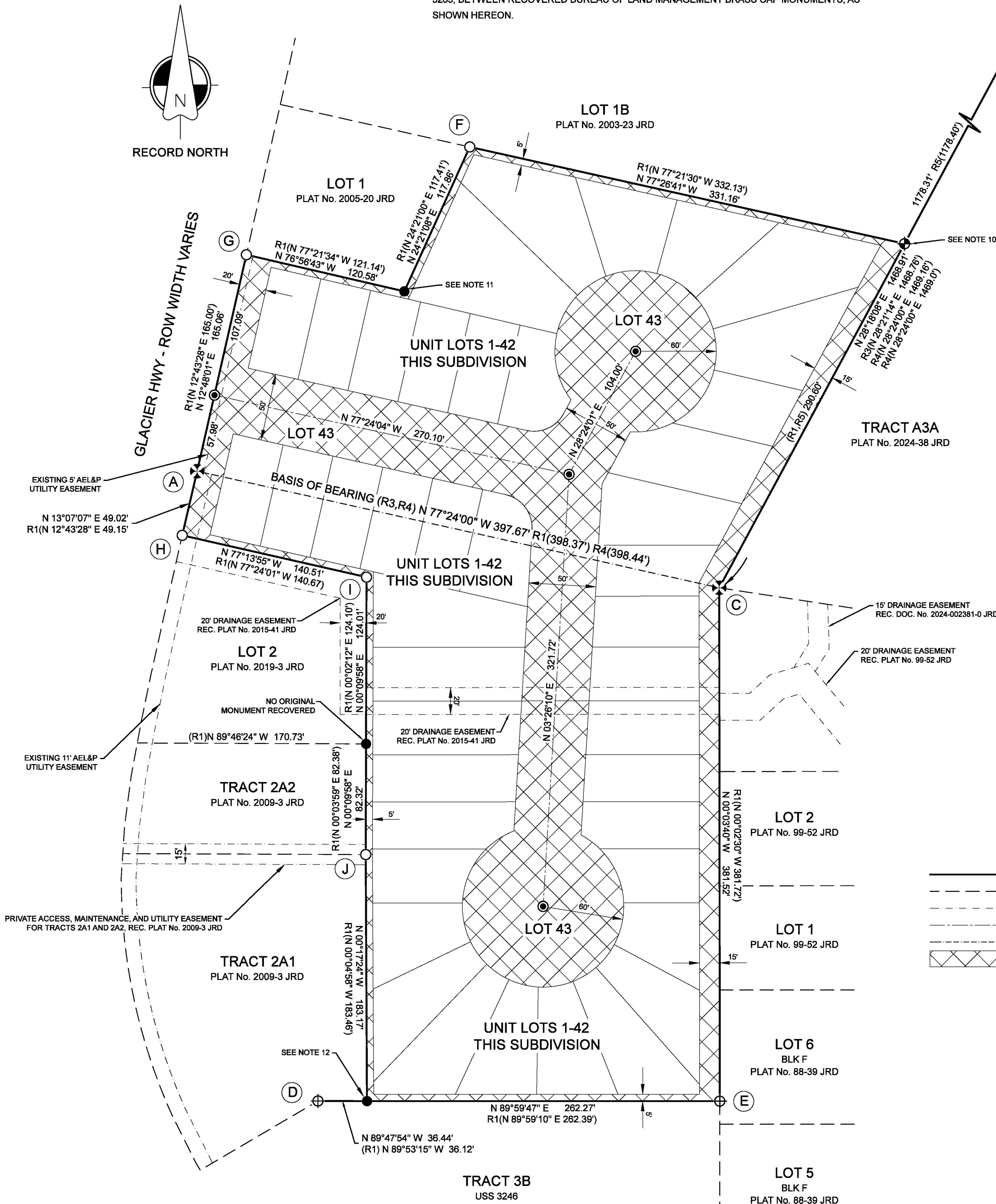
CHAIRPERSON OF THE PLANNING COMMISSION
CITY & BOROUGH OF JUNEAU

ATTEST:

MUNICIPAL CLERK
CITY AND & BOROUGH OF JUNEAU

BASIS OF BEARING

THE BASIS OF BEARING FOR THIS PLAT IS THE RECORD BEARING OF N 77° 24' 00" W, AS DELINEATED IN THE OFFICIAL PLAT OF CHILKAT VIEW SUBDIVISION II, RECORD PLAT No. 2015-41 JUNEAU RECORDING DISTRICT, AND THE OFFICIAL PLATS OF U.S. SURVEYS No. 3246 AND No. 3263, BETWEEN RECOVERED BUREAU OF LAND MANAGEMENT BRASS CAP MONUMENTS, AS SHOWN HEREON.



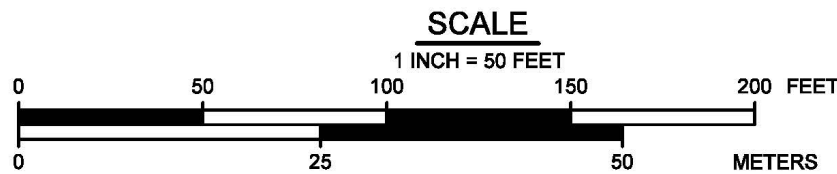
LOT AREA TABLE		
LOT	AREA (SF)	AREA (AC)
BROWTINE SUBDIVISION	221,331	5.08
LOT 43 THIS SURVEY	70,320	1.61
UNIT LOTS 1-42 THIS SURVEY	151,011	3.47

NOTES

1. THE ERROR OF CLOSURE OF THIS SURVEY DOES NOT EXCEED 1:5,000.
2. ALL BEARINGS SHOWN ARE TRUE BEARINGS RELATIVE TO THE BASIS OF BEARING, AS SHOWN HEREON. SURVEY COURSE DISTANCES SHOWN ARE MEASURED IN U.S. SURVEY FEET AND REDUCED TO HORIZONTAL FIELD DISTANCES.
3. SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.
4. DOMESTIC WATER AND SANITARY SEWER PROVIDED BY THE CITY AND BOROUGH OF JUNEAU PUBLIC UTILITIES.
5. WHEN DIFFERENT FROM MEASURED, RECORD BEARINGS AND DISTANCES ARE SHOWN IN PARENTHESIS AND REFERENCED TO A RECORD PLAT (R#).
6. THIS PLAT CREATES AN ALTERNATIVE RESIDENTIAL SUBDIVISION (ARS) PURSUANT TO AND GOVERNED BY THE CITY AND BOROUGH OF JUNEAU LAND USE CODE TITLE 49 ARTICLE IX. EACH OWNER OF A UNIT-LOT IS REQUIRED TO, AND SHALL BE, THROUGHOUT THEIR OWNERSHIP, A MEMBER OF THE BROWTINE SUBDIVISION HOA, AND REQUIRED TO PAY ASSESSMENTS ASSESSED BY THE BROWTINE SUBDIVISION HOA.
7. PER CBJ 49.15.920(j), NO PARKING AREAS, DWELLING UNITS, UNIT-LOTS, OR PERMISSABLE USES MAY BE LOCATED WITHIN THE ARS PARENT LOT, OR LOT 43 THIS SURVEY.
8. ACCESS TO LOTS SHALL BE VIA ACCESS EASEMENTS SHOWN ON THIS PLAT AND IS SUBJECT TO THE REQUIREMENTS IN THE BYLAWS OF THE BROWTINE SUBDIVISION HOA.
9. A COMBINED BLANKET EASEMENT FOR DRAINAGE, UTILITIES, AND INGRESS AND EGRESS IS CREATED ACROSS LOT 43, AS SHOWN HEREON. THE EASEMENT CREATED IS PRIVATE AND FOR THE BENEFIT OF THE UNIT LOTS CREATED WITH THIS SUBDIVISION. THE LAND ON WHICH THE PRIVATE EASEMENT IS LOCATED IS OWNED AND MANAGED BY THE BROWTINE SUBDIVISION HOA.
10. THE PRIMARY MONUMENT AT THE NORTHEAST CORNER OF THIS SUBDIVISION WAS FOUND DISTURBED DURING THE INITIAL BOUNDARY RETRACEMENT, AND RESET PER RECORD DISTANCE ALONG THE ORIGINAL U.S. SURVEY BOUNDARY.
11. THE TONER-NORDLING YELLOW PLASTIC CAP SECONDARY MONUMENT RECOVERED ALONG THE NORTHERLY BOUNDARY OF THIS SUBDIVISION WAS FOUND BENT AND DISTURBED DURING THE INITIAL BOUNDARY RETRACEMENT, AND RESET WITH A TYPICAL SECONDARY MONUMENT AT THE SPINHOLE LOCATION OF THE FOUND ORIGINAL MONUMENT.
12. THE SOUTHWESTERLY CORNER OF THIS SUBDIVISION WAS MARKED WITH A #5 REBAR WITH NO CAP. THE LOCATION OF THE REBAR WAS HELD AND REPLACED WITH A TYPICAL SECONDARY MONUMENT.
13. CURVE DATA IS FOUND ON SHEET 2 OF THIS PLAT, MONUMENT SKETCH DETAILS ARE FOUND ON SHEET 3 OF THIS PLAT.

LEGEND

- 2.5" PRIMARY MONUMENT RESET THIS SURVEY
- 3.25" ALUMINUM CAP PRIMARY MONUMENT RECOVERED
- SECONDARY MONUMENT RECOVERED
- 3.25" BLM BRASS CAP MONUMENT RECOVERED
- 2" ALUMINUM CAP MONUMENT SET THIS SURVEY, SEE TYPICAL DETAIL
- 1-1/8" BRASS CENTERLINE MONUMENT WITH MAGNET SET THIS SURVEY
- SUBDIVISION BOUNDARY LINE, THIS SURVEY
- PROPERTY LINE NOT SURVEYED
- EASEMENT BOUNDARY
- RIGHT-OF-WAY CENTERLINE
- SURVEY TIE
- LOT 43 THIS SURVEY, ARS PARENT LOT, WITH BLANKET EASEMENT, SEE NOTE 7, 8, AND 9
- R1) PLAT No. 2019-3 JRD
- R2) PLAT No. 2015-41 JRD
- R3) PLAT No. 2024-5 JRD
- R4) OFFICIAL PLAT US SURVEY No. 3263
- R5) PLAT No. 2005-20 JRD
- JRD JUNEAU RECORDING DISTRICT
- BLM U.S. BUREAU OF LAND MANAGEMENT



LAST FRONTIER
SURVEYING & ENGINEERING LLC

SURVEYOR: ALEC VENECHUK, PLS
PO BOX 32346
JUNEAU AK 99803

OWNERS: MISTY SEA CHARTERS AND LODGING LLC
AND R & S CONSTRUCTION, LLC
PO BOX 210194
AUKA BAY, AK 99821

A PLAT OF
BROWTINE SUBDIVISION

A SUBDIVISION OF
LOT 1 RAVENWOOD SUBDIVISION
AS SHOWN ON RECORD PLAT 2019-3 JUNEAU RECORDING DISTRICT
WITHIN U.S. SURVEY No. 3246 AND U.S. SURVEY No. 3263

- STATE RECORDERS OFFICE AT ANCHORAGE -
WITHIN THE CITY AND BOROUGH OF JUNEAU, ALASKA
CBJ CASE No. ARP 2024-0001

DRAWN BY: AMV DATE: 03/24/2025 SHEET 1 OF 3

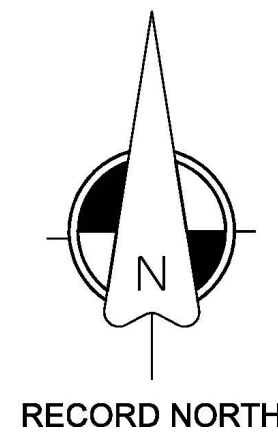
SURVEYOR'S CERTIFICATE

I, ALEC VENECHUK, IN MY CAPACITY AS A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF ALASKA, CERTIFY THAT THIS PLAT REPRESENTS THE SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, THAT THE ACCURACY OF THE SURVEY IS WITHIN THE LIMITS REQUIRED BY TITLE 49 OF THE CODE OF THE CITY AND BOROUGH OF JUNEAU, THAT ALL DIMENSIONS AND RELATIVE BEARINGS ARE CORRECT, AND THAT MONUMENTS ARE SET IN PLACE AND NOTED UPON THIS PLAT AS PRESENTED.

ALEC M VENECHUK, ALASKA PROFESSIONAL LAND SURVEYOR No. 180545

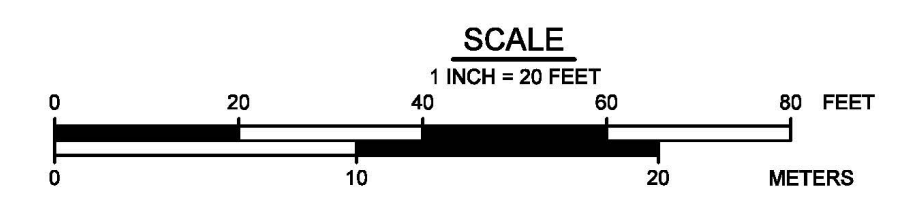
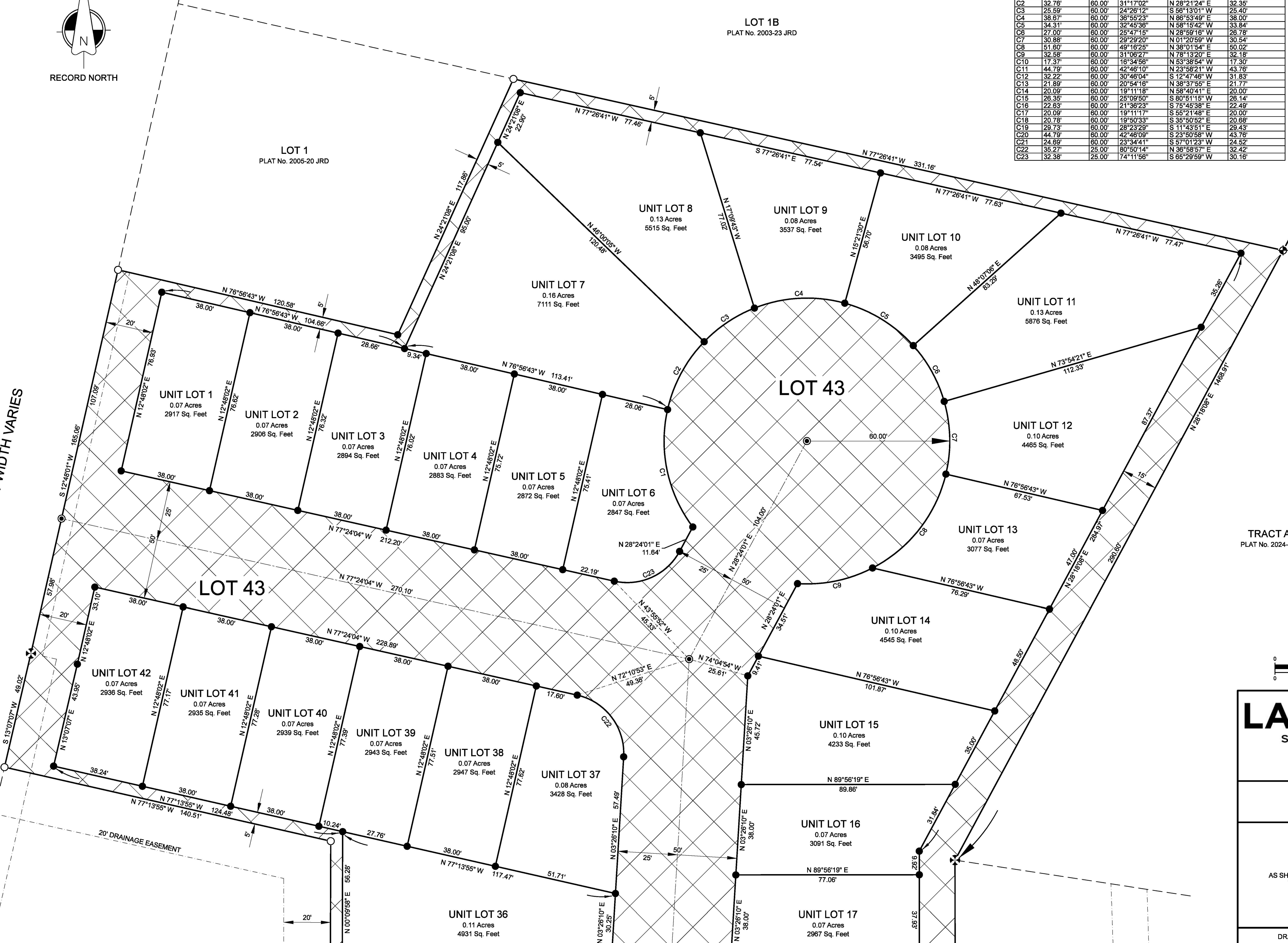
DATE: _____





CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	52.04'	60.00'	49°41'25"	S 12°07'49" E	50.42'
C2	32.76'	60.00'	31°17'02"	N 28°21'24" E	32.36'
C3	25.59'	60.00'	24°26'12"	S 56°13'01" W	25.40'
C4	38.67'	60.00'	36°55'23"	N 86°53'49" E	38.00'
C5	34.31'	60.00'	32°45'38"	N 58°15'42" W	33.64'
C6	27.00'	60.00'	25°47'15"	N 28°59'16" W	26.78'
C7	30.88'	60.00'	29°29'20"	N 01°20'59" W	30.54'
C8	51.50'	60.00'	49°16'25"	N 38°01'54" E	50.02'
C9	32.58'	60.00'	31°06'27"	N 78°13'20" E	32.18'
C10	17.37'	60.00'	16°34'56"	N 53°38'54" W	17.30'
C11	44.79'	60.00'	42°46'10"	N 23°58'21" W	43.76'
C12	32.22'	60.00'	30°46'04"	S 12°47'46" W	31.83'
C13	21.89'	60.00'	20°54'16"	N 38°37'55" E	21.77'
C14	20.09'	60.00'	19°11'11"	N 58°40'41" E	20.00'
C15	26.35'	60.00'	25°09'50"	S 80°51'15" W	26.14'
C16	22.63'	60.00'	21°36'23"	S 75°45'38" E	22.49'
C17	20.09'	60.00'	19°11'11"	S 55°21'48" E	20.00'
C18	20.78'	60.00'	19°50'53"	S 35°50'52" E	20.68'
C19	29.73'	60.00'	28°23'29"	S 11°43'51" E	29.43'
C20	44.79'	60.00'	42°46'09"	S 23°50'58" W	43.76'
C21	24.69'	60.00'	23°34'41"	S 57°01'23" W	24.52'
C22	35.27'	25.00'	60°50'14"	N 36°58'57" E	32.42'
C23	32.38'	25.00'	74°11'56"	S 65°29'59" W	30.16'

GLACIER HWY - ROW WIDTH VARIES

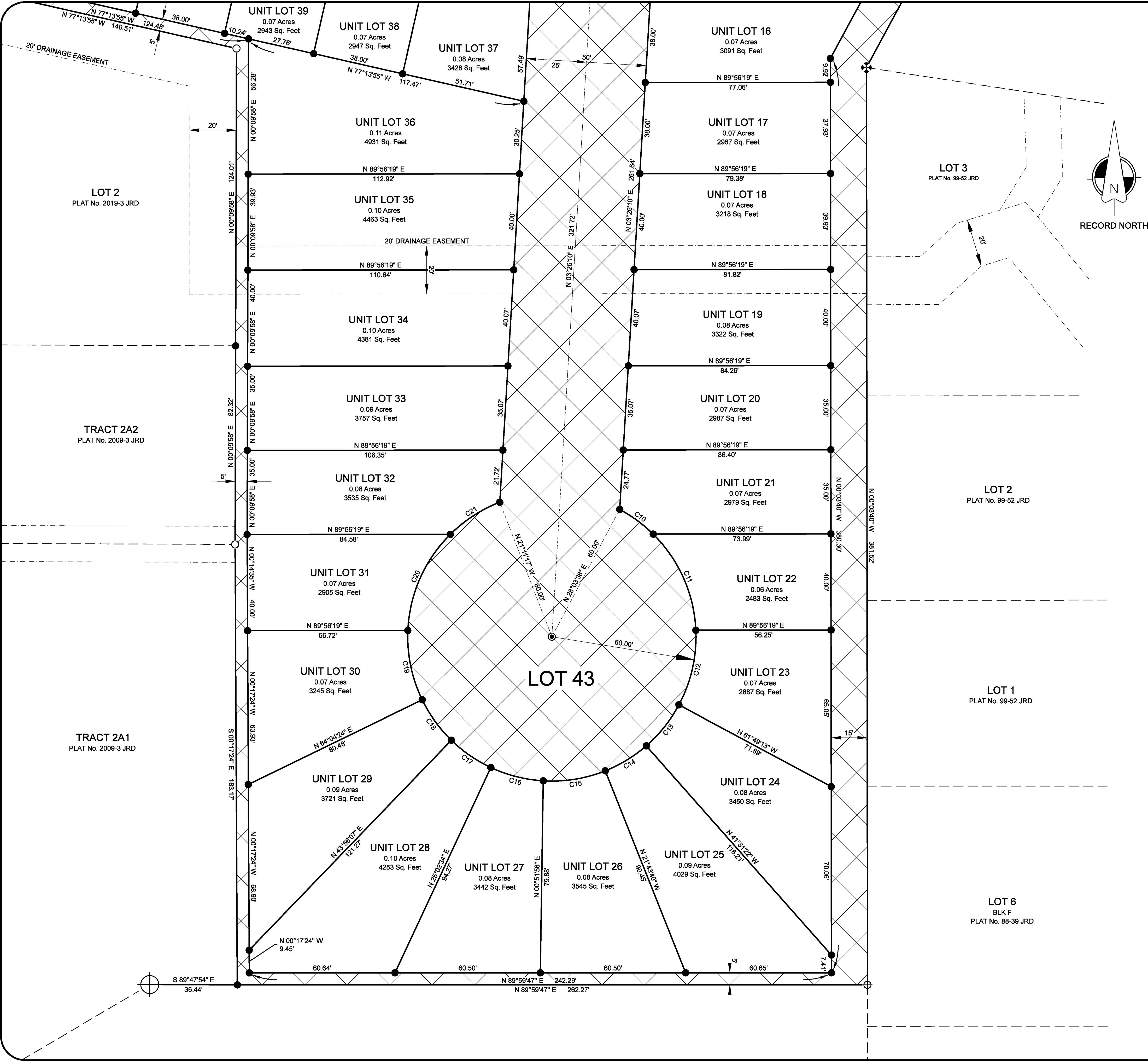


LAST FRONTIER
SURVEYING & ENGINEERING LLC
SURVEYOR: ALEC VENECHUK, PLS
PO BOX 32346
JUNEAU AK 99803

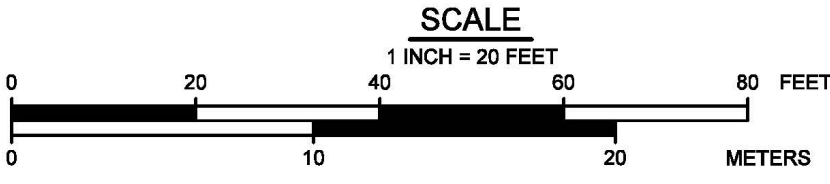
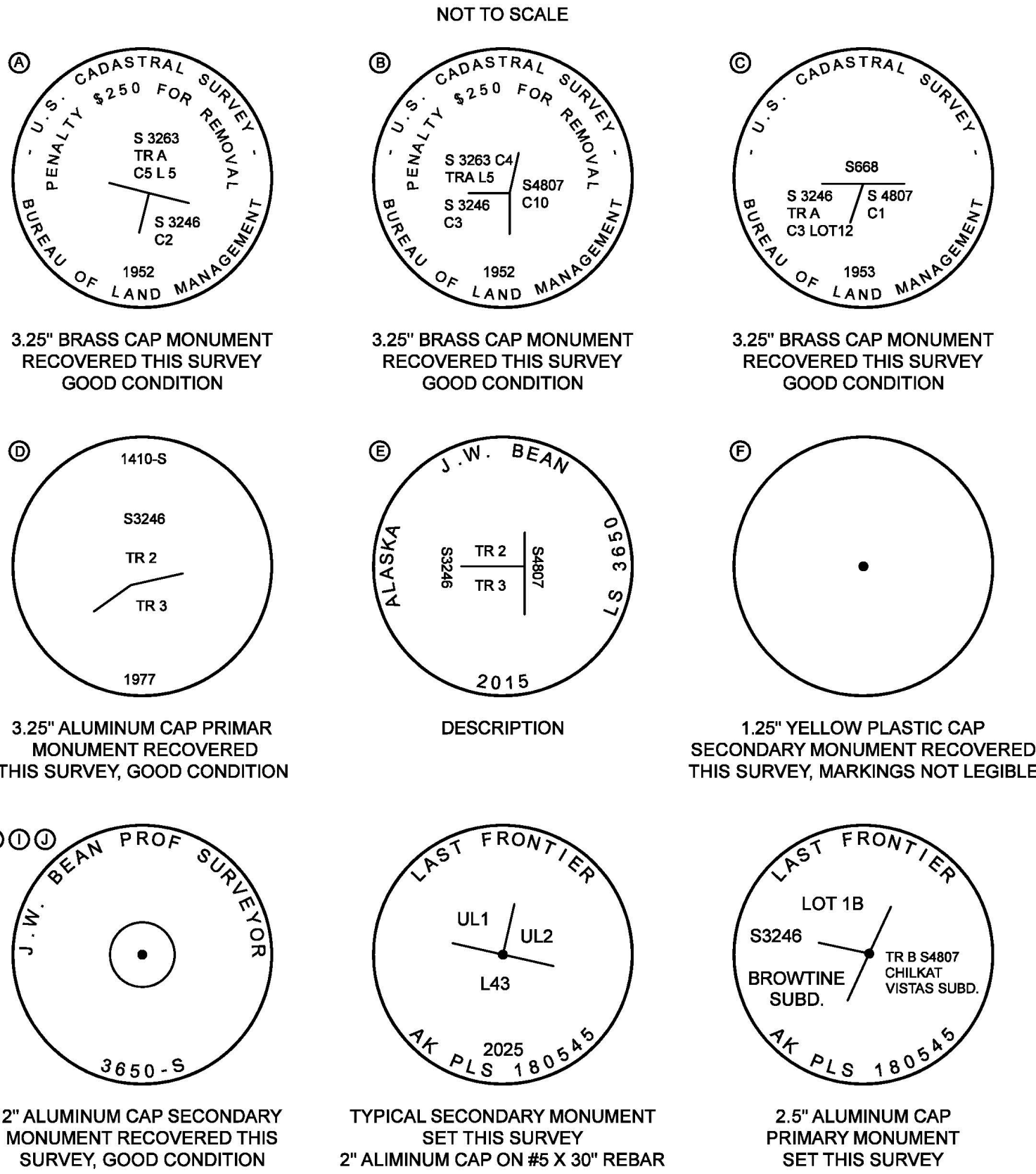
MISTY SEA CHARTERS AND LODGING LLC
AND R & S CONSTRUCTION, LLC
PO BOX 210194
AUKIE BAY, AK 99821

A PLAT OF
BROWTINE SUBDIVISION
A SUBDIVISION OF
LOT 1 RAVENWOOD SUBDIVISION
AS SHOWN ON RECORD PLAT 2019-3 JUNEAU RECORDING DISTRICT
WITHIN U.S. SURVEY No. 3248 AND U.S. SURVEY No. 3263
- STATE RECORDERS OFFICE AT ANCHORAGE -
WITHIN THE CITY AND BOROUGH OF JUNEAU, ALASKA
CBJ CASE No. ARP 2024-0001

DRAWN BY: AMV DATE: 03/24/2025 SHEET 2 OF 3



MONUMENT DETAILS



LAST FRONTIER
SURVEYING & ENGINEERING LLC

SURVEYOR: ALEC VENECHUK, PLS
PO BOX 32346
JUNEAU AK 99803

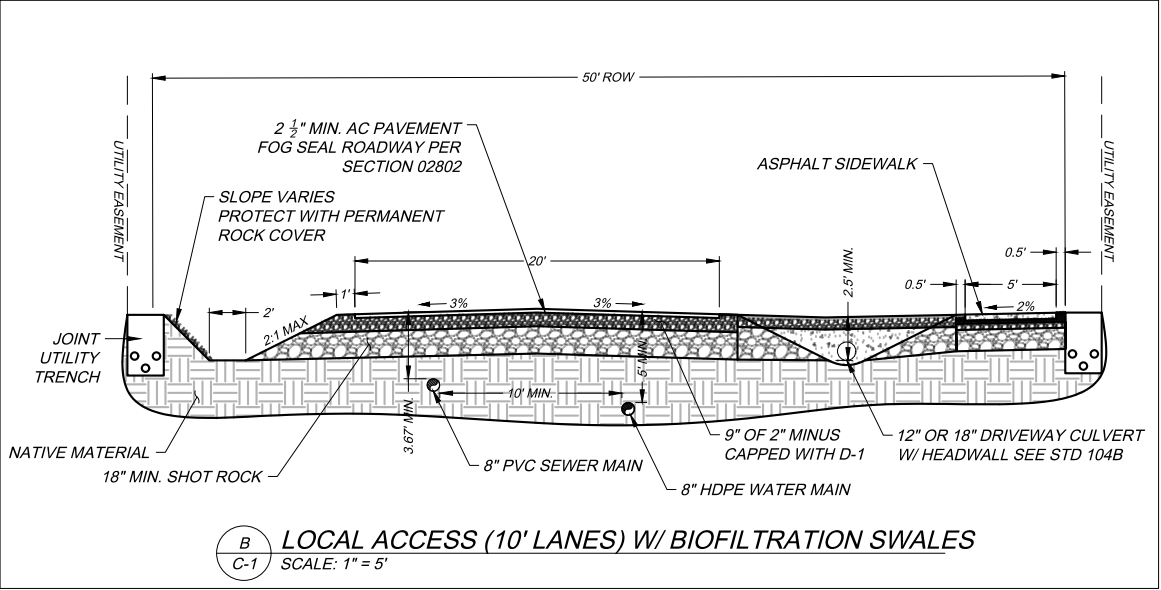
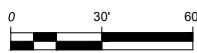
MISTY SEA CHARTERS AND LODGING LLC
AND R & S CONSTRUCTION, LLC
PO BOX 210194
AUK BAY, AK 99821

A PLAT OF
BROWTINE SUBDIVISION
A SUBDIVISION OF
LOT 1 RAVENWOOD SUBDIVISION
AS SHOWN ON RECORD PLAT 2019-3 JUNEAU RECORDING DISTRICT
WITHIN U.S. SURVEY No. 3248 AND U.S. SURVEY No. 3263
- STATE RECORDERS OFFICE AT ANCHORAGE -
WITHIN THE CITY AND BOROUGH OF JUNEAU, ALASKA
CBL CASE No. ARP 2024-0001

DRAWN BY: AMV DATE: 03/24/2025 SHEET 3 OF 3

BROWTINE SUBDIVISION
4670 GLACIER HWY
JUNEAU, AK

A
C-1 OVERALL GRADING PLAN
SCALE: 1" = 30'



FILE: Browtine Approach - 5.21.25.dwg

PROJECT: 24-RAV

CHECKED BY: RLM

DETAILED BY: KML

DESIGNED BY: KML

DATE

NO.

REVISION

BY

1/1/2017

Vector
ENGINEERING INC.
2724 Black Lake Boulevard SW Suite 202
Tumwater, WA 98512
ph: (360) 352-2477 fax: (360) 352-0179 E-mail: admin@vectorengineeringinc.com

BROWTINE SUBDIVISION
4670 GLACIER HWY
JUNEAU, AK

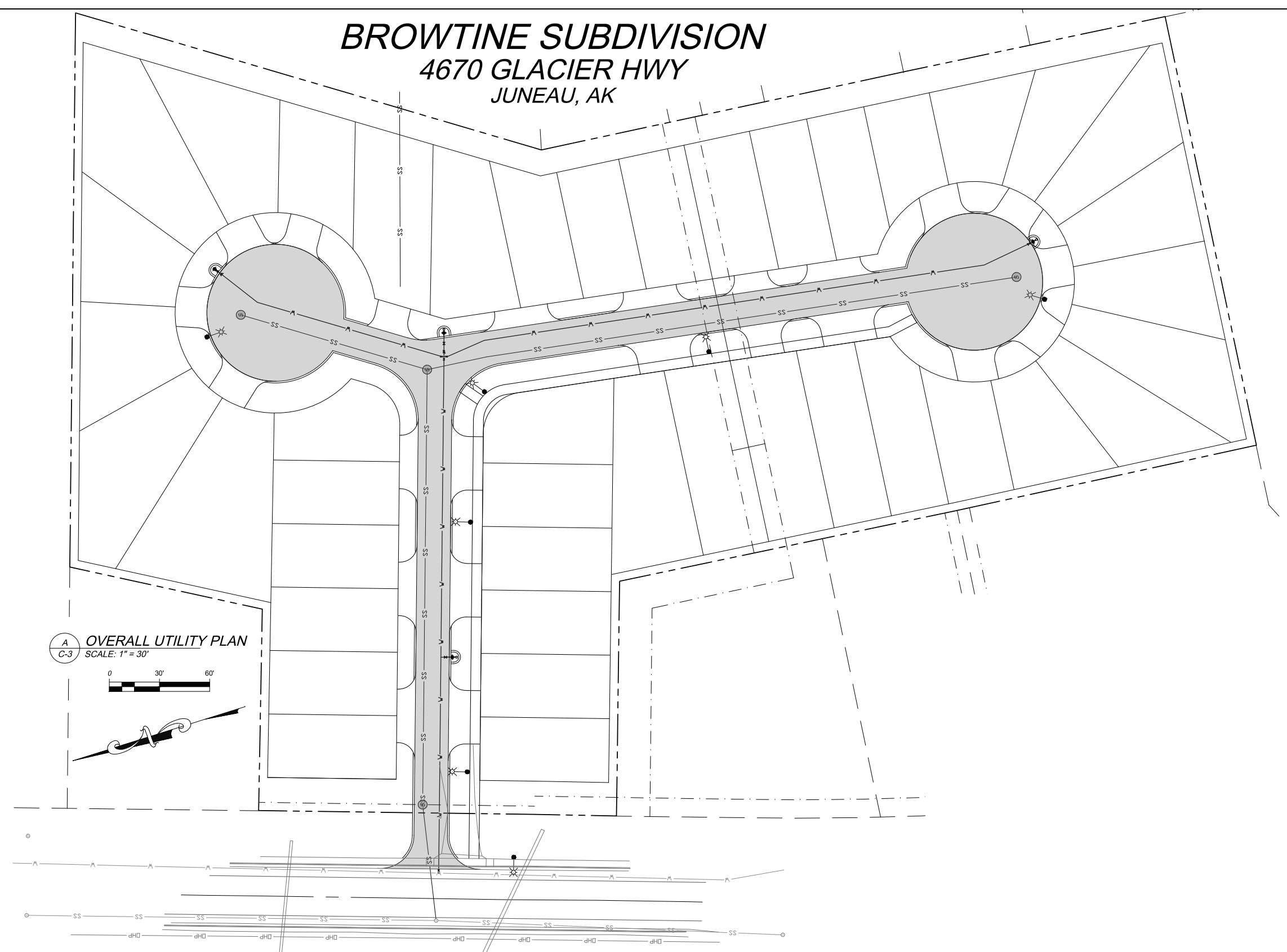
DOT APPROACH PERMIT

C-1

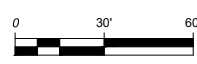
SITE PLAN

SHT 1 OF ----

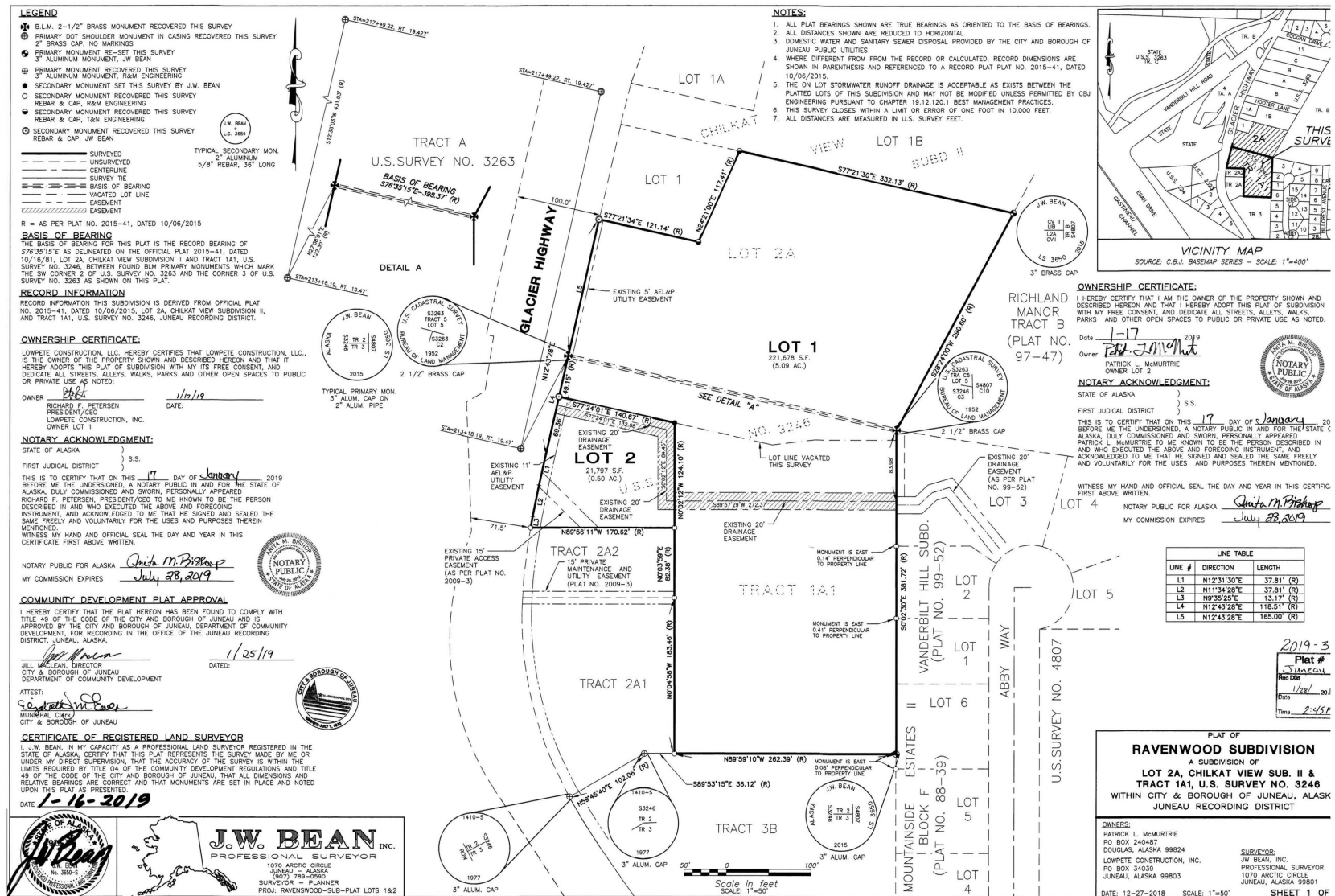
BROWTINE SUBDIVISION
4670 GLACIER HWY
JUNEAU, AK



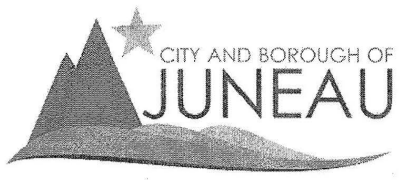
OVERALL UTILITY PLAN
SCALE: 1" = 30'



FILE: Browtine Approach - 5.21.25.dwg		5			-----	 Vector ENGINEERING INC. 2724 Black Lake Boulevard SW Suite 202 Tumwater, WA 98512 ph: (360) 352-2477 fax: (360) 352-0179 E-mail: admin@vectorengineeringinc.com	BROWTINE SUBDIVISION 4670 GLACIER HWY JUNEAU, AK	C-3
PROJECT: 24-RAV		4						
		3						
CHECKED BY: RLM		2					DOT APPROACH PERMIT	
DETAILED BY: KML		1					- -	
DESIGNED BY: KML	DATE	NO.	REVISION	BY	1/1/2017			SHT 3 OF ----



Juneau 2019-2



Treasury Division
155 S. Seward Street
Juneau, AK 99801
(907) 586-0377 Phone
(907) 586-5367 Fax

CERTIFICATION OF TAXES AND ASSESSMENTS PAID

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Judicial District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described real property is carried on the tax records in the name of:

State of Alaska Department of Natural Resources

Current Owner
USS 3853 FR

Legal Description
3D0201000050

Parcel Code Number

and that, according to the records in my possession, there are no taxes assessed against said parcel as this parcel is owned by the State of Alaska, which is a tax exempt entity; and any special assessments assessed against said parcel and in favor of the City and Borough of Juneau have been paid in full.

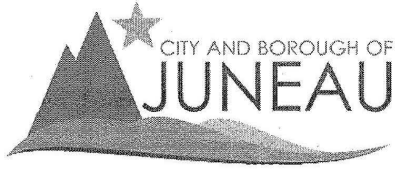

Cheryl A. Crawford

January 22, 2019

Date

This Certification of Payment of Taxes is valid through December 31, 2019

Juneau 2019-2



Treasury Division
155 S. Seward Street
Juneau, AK 99801
(907) 586-0377 Phone
(907) 586-5367 Fax

CERTIFICATION OF TAXES AND ASSESSMENTS PAID

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Judicial District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described real property is carried on the tax records in the name of:

City and Borough of Juneau Lands and Resources

Current Owner

USS 3853 LT 2 FR

Legal Description

3D0201000070

Parcel Code Number

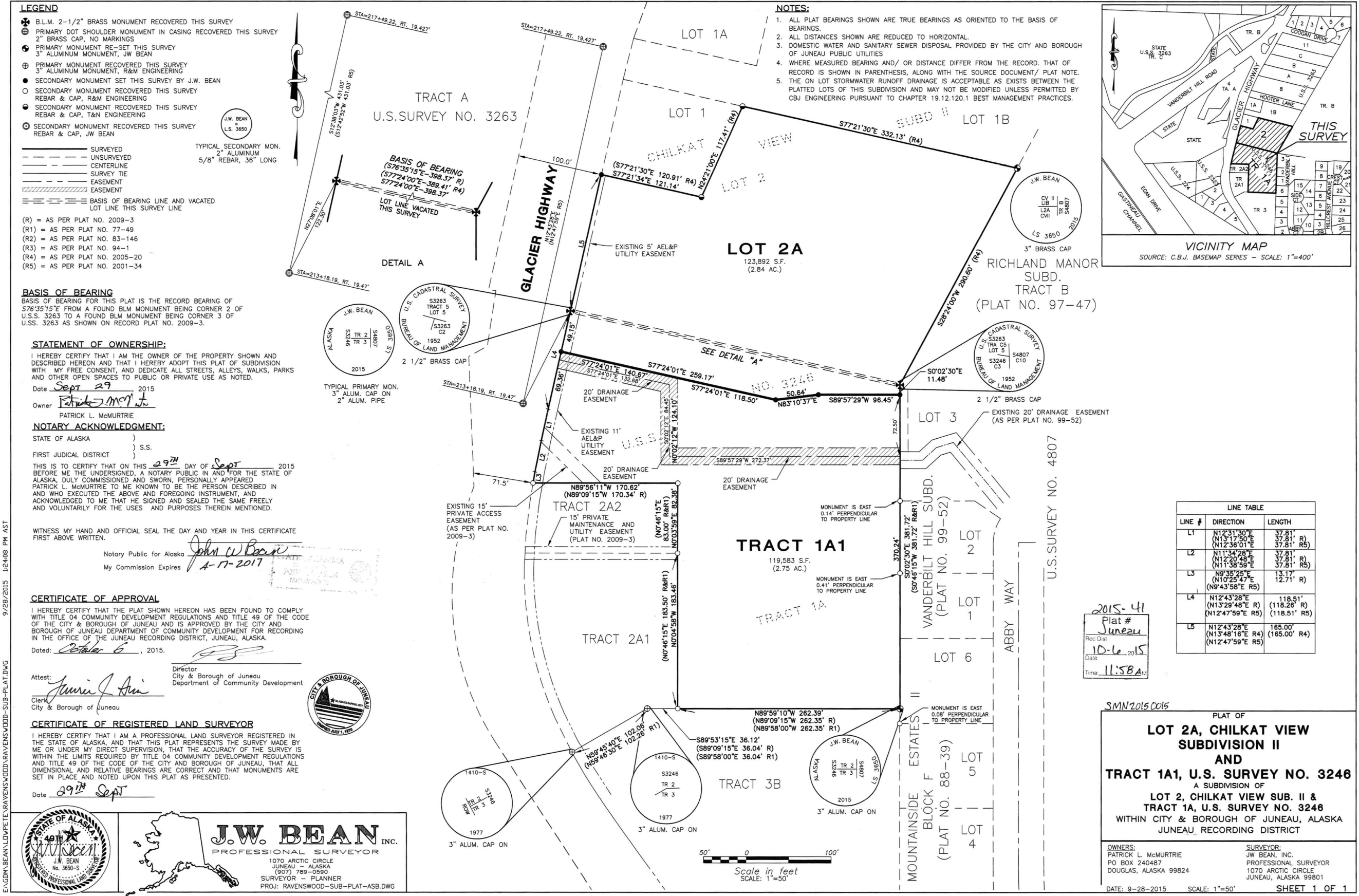
and that, according to the records in my possession, there are no taxes assessed against said parcel as this parcel is owned by the City and Borough of Juneau, which is a tax exempt entity; and any special assessments assessed against said parcel and in favor of the City and Borough of Juneau have been paid in full.

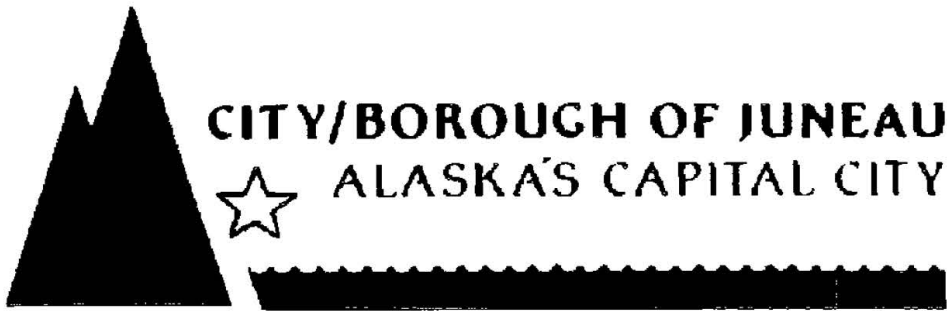

Cheryl A. Crawford

January 22, 2019

Date

This Certification of Payment of Taxes is valid through December 31, 2019





Treasury Division
155 S. Seward Street
Juneau, AK 99801
(907) 586-0377 Phone
(907) 586-5367 Fax

CERTIFICATION OF TAXES AND ASSESSMENTS PAID

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Judicial District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described real property is carried on the tax records in the name of:

PATRICK L. MCMURTRIE

Current Owner

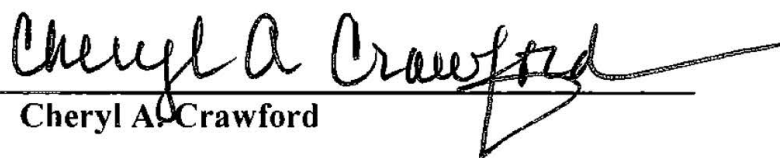
CHILKAT VIEW II LT 2

Legal Description

7-B10-0-115-006-1

Parcel Code Number

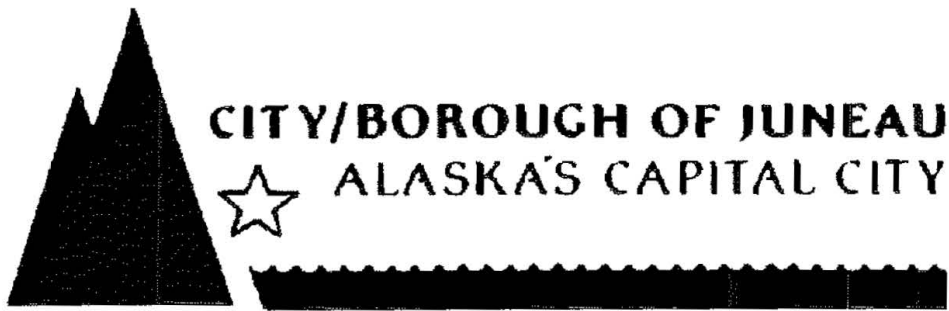
and that, all Real Property taxes and assessments levied by the City and Borough of Juneau against said Real Property have been paid in full. If approval is sought between January 1 and the date of levy, there is on deposit with the Treasury Department an amount sufficient to pay Real Property tax for the current year.


Cheryl A. Crawford

September 16, 2015

Date

This Certification of Payment of Taxes is valid through December 31, 2015



Treasury Division
155 S. Seward Street
Juneau, AK 99801
(907) 586-0377 Phone
(907) 586-5367 Fax

CERTIFICATION OF TAXES AND ASSESSMENTS PAID

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Judicial District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described real property is carried on the tax records in the name of:

PATRICK L MCMURTRIE

Current Owner

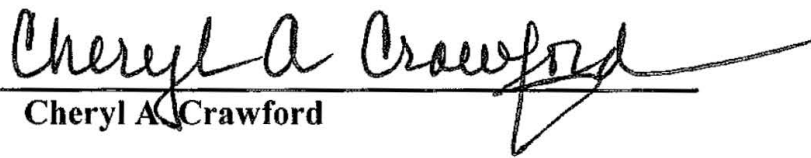
USS 3246 TR 1A

Legal Description

7-B10-0-115-005-1

Parcel Code Number

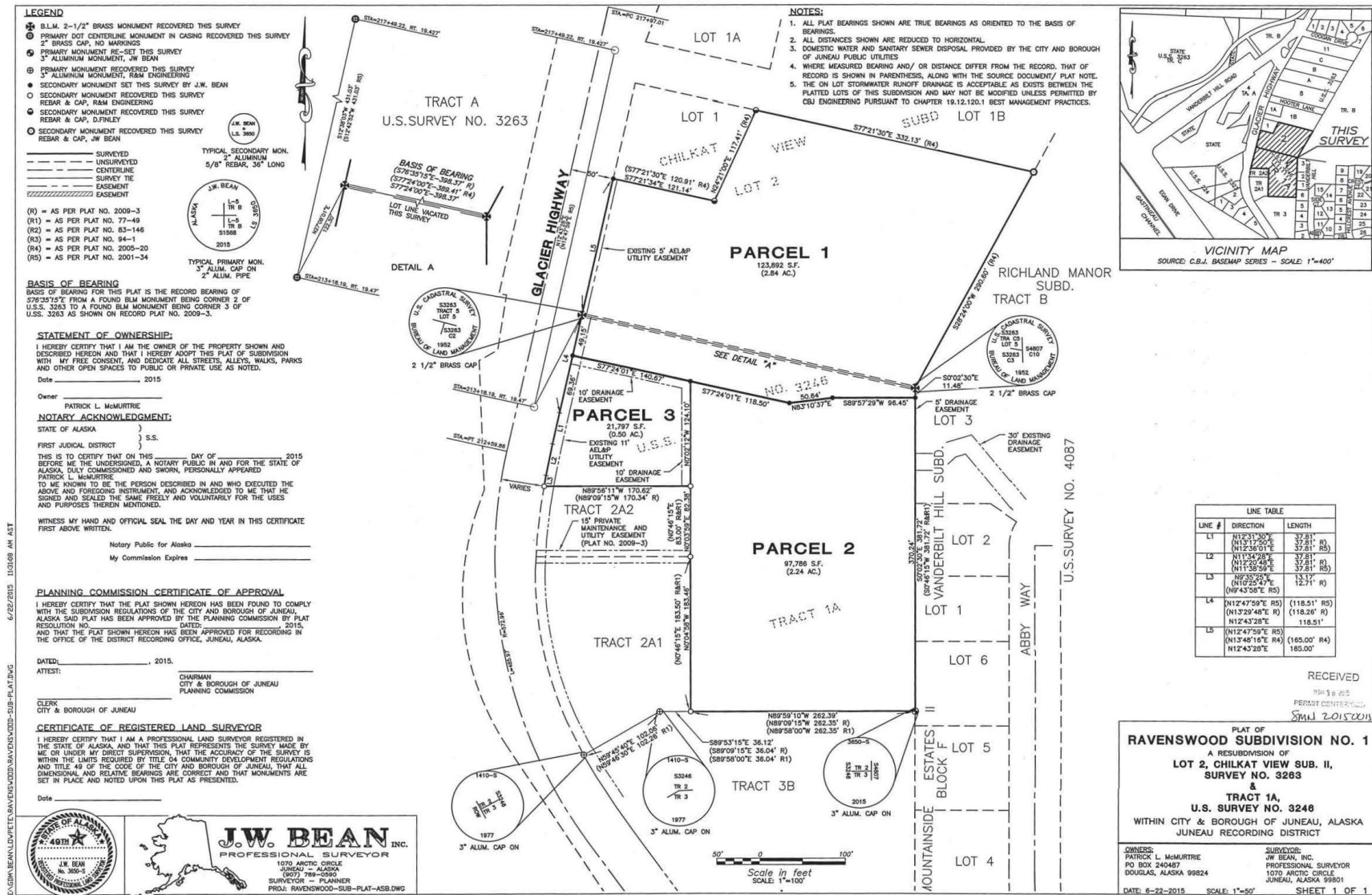
and that, all Real Property taxes and assessments levied by the City and Borough of Juneau against said Real Property have been paid in full. If approval is sought between January 1 and the date of levy, there is on deposit with the Treasury Department an amount sufficient to pay Real Property tax for the current year.


Cheryl A. Crawford

September 16, 2015

Date

This Certification of Payment of Taxes is valid through December 31, 2015



Presented by: The Manager
Introduced: 02/24/2014
Drafted by: A.G. Mead

ORDINANCE OF THE CITY AND BOROUGH OF JUNEAU, ALASKA

Serial No. 2014-10

An Ordinance Amending the Official Zoning Map of the City and Borough to Change the Zoning of USS 3246 Tracts 1A, 2A1 and 2A2, Located at 4660, 4664 and 4670 Glacier Highway, from D-5 to D-15.

WHEREAS, the area of the proposed rezone, USS 3246, Tracts 1A, 2A1 and 2A2, located near the Pioneer Home at 4660, 4664, and 4670 Glacier Highway, is currently zoned as D-5 (single family/duplex – five units per acre); and

WHEREAS, the CBJ Comprehensive Plan supports denser residential zoning adjacent to transit corridors; and

WHEREAS, the proposed rezone is located within the Urban Service Area Boundary map, which has access to City and Borough water and sewer utilities to adequately accommodate higher development usage and which the CBJ Comprehensive Plan supports as an area for compact development to increase efficient land use; and

WHEREAS, changing the zoning of these three properties would expand an existing D-15 Zone (15 units per acre), rather than create a new one; and

WHEREAS, at its November 26, 2013 regular meeting the Planning Commission recommended that a rezoning request be forwarded to the Assembly for approval.

NOW, THEREFORE, BE IT ENACTED BY THE ASSEMBLY OF THE CITY AND BOROUGH OF JUNEAU, ALASKA:

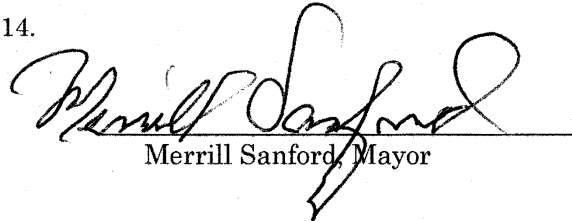
Section 1. Classification. This ordinance is of a general and permanent nature and shall become a part of the City and Borough of Juneau Municipal Code.

Section 2. Amendment to the Official Zoning Map. The official zoning map of the City and Borough, adopted pursuant to CBJ 49.25.110, is amended to change the zoning of USS 3246, Tracts 1A, 2A1 and 2A2, located near the Pioneer Home at 4660, 4664, and 4670 Glacier Highway, from D-5, to D-15.

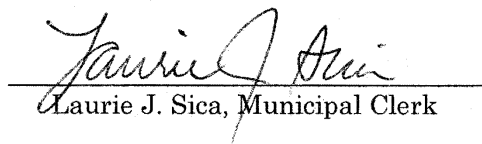
The described rezone is shown on the attached Exhibit “A” illustrating the area of the proposed zone change.

Section 3. Effective Date. This ordinance shall be effective 30 days after its adoption.

Adopted this 17th day of March, 2014.


Merrill Sanford, Mayor

Attest:


Laurie J. Sica, Municipal Clerk

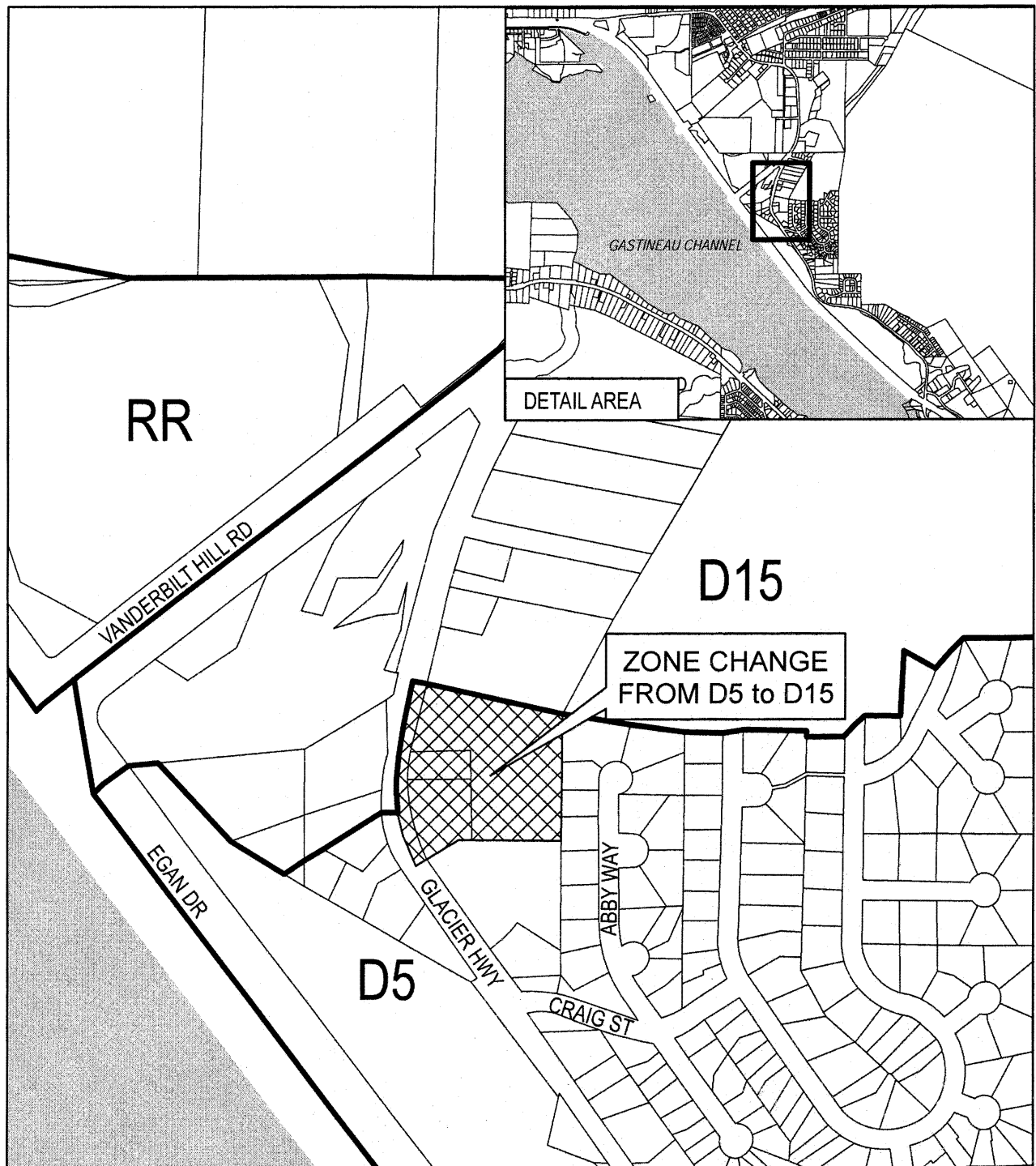
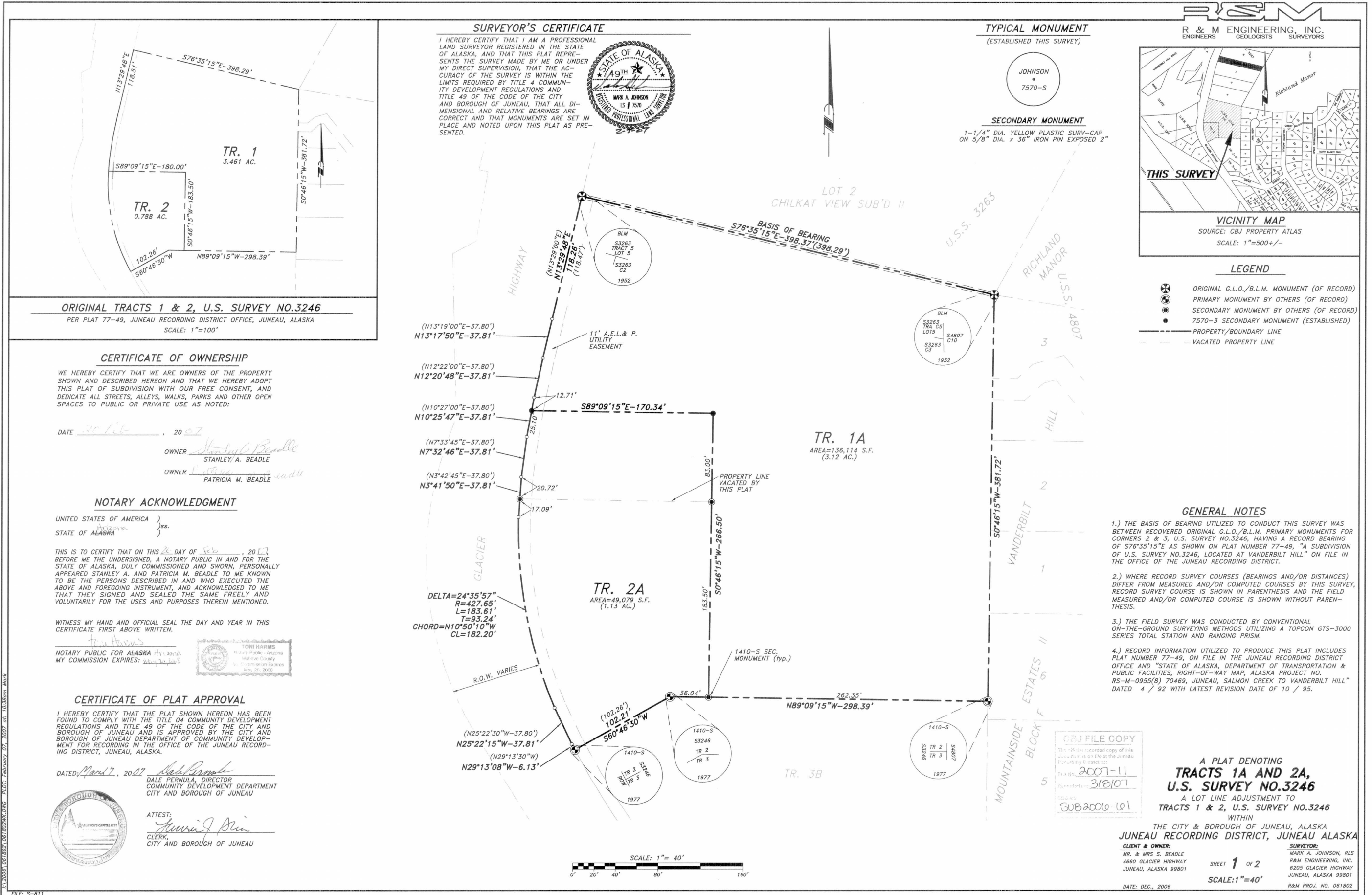
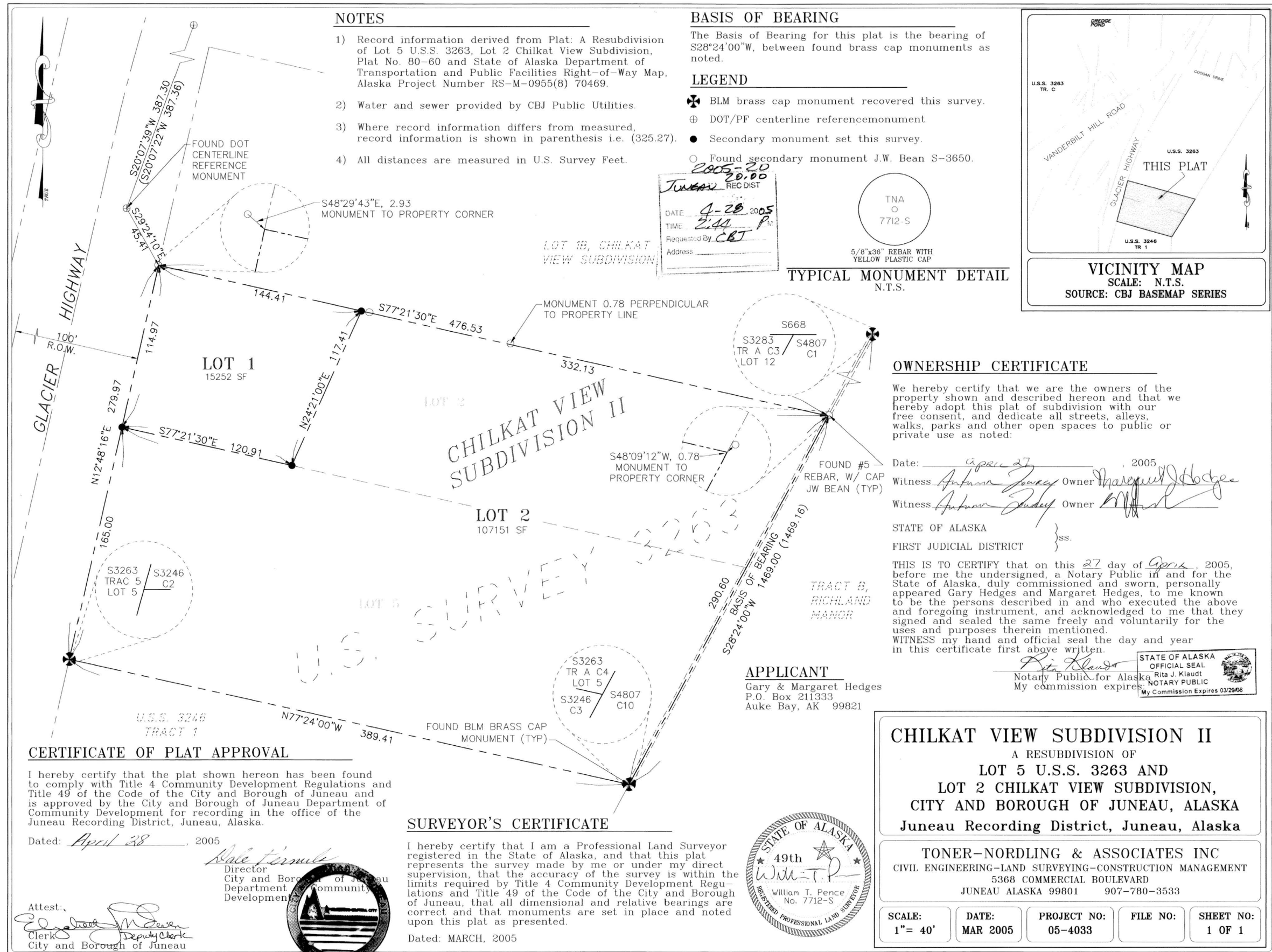


Exhibit A - Ord. 2014-10 Zoning Change for USS 3246 Tracts 1A, 2A1, and 2A2 from D5 to D15.	0 125 250 500 750 Feet N
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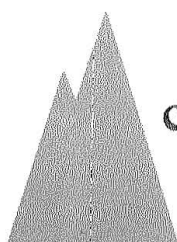
Map created: 1/27/2014

Project source: F:\gis_work\Quinn\Projects\CDD\vicinity maps 14.mxd





Juneau 2005-20



CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

CERTIFICATION OF PAYMENT OF TAXES

I, the undersigned, being duly appointed, qualified Treasurer for the City and Borough of Juneau, First Federal District, State of Alaska, do hereby certify that, according to the records of the City and Borough of Juneau, the following described property is carried on the tax records in the name of:

Margaret J. Hedges

Current Owner

USS 3263 L 5; Chilkat View L 2

Description

7-B10-0-115-006-0; 5-B10-0-100-001-0

Parcel Code Number

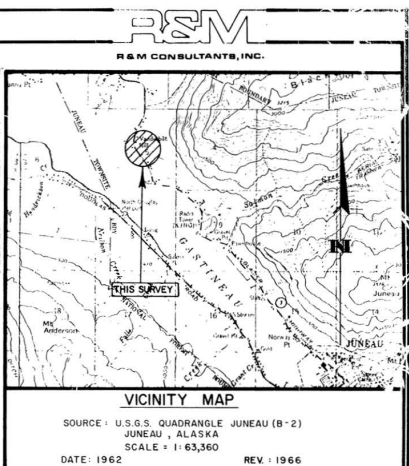
and that, according to the records in my possession, all taxes assessed against said lands and in favor of the City and Borough of Juneau are paid in full; that current 2004 taxes due on or before September 30, 2004, have been paid.


Barbara J. Rolfe, Treasurer

April 5, 2005

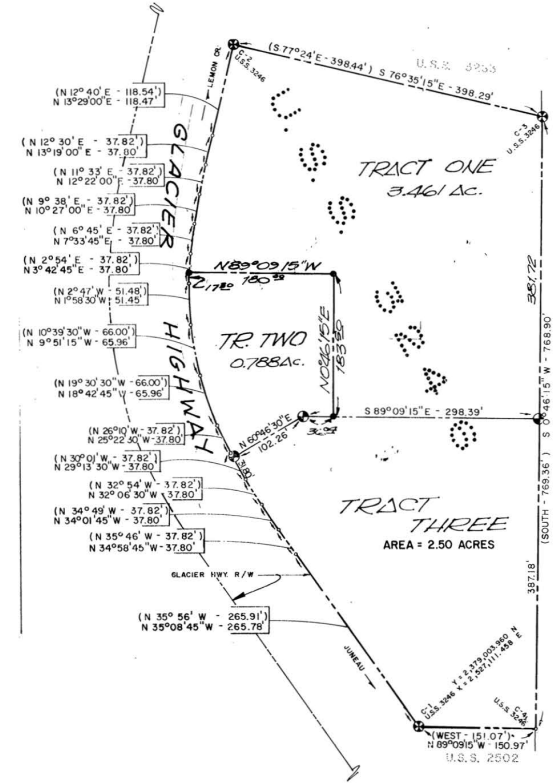
Date

155 So. Seward Street, Juneau, Alaska 99801-1397

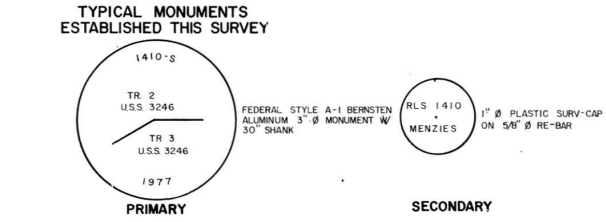


LEGAL DESCRIPTION
A CERTAIN TRACT OR PARCEL OF LAND LYING AND BEING SITUATE WITHIN U.S. SURVEY NO. 3246 (PROTRACTED SEC. 5, T.41S., R.67E., C.R.M.) FIRST JUDICIAL DISTRICT, STATE OF ALASKA, BEING DESCRIBED AS FOLLOWS:
BEGINNING AT THE ORIGINAL G.L.O. MONUMENT CORNER NO. 1 OF U.S. SURVEY NO. 3246 HAVING ALASKA STATE PLANE COORDINATES OF Y = 2,375,003.960 N AND X = 2,527,111.458 E; THENCE ON GRID BEARINGS AND GEODETIC DISTANCES ALONG THE EASTERLY RIGHT-OF-WAY OF GLACIER HIGHWAY, N 35°08'45" W - 265.78' TO A POINT OF CURVATURE; THENCE ALONG CHORDS OF SAID EASTERLY RIGHT-OF-WAY, N 34°58'45" W - 37.80'; N 34°01'45" W - 37.80'; N 32°06'30" W - 37.80'; N 29°13'30" W - 37.80'; N 25°22'30" W - 37.80'; N 18°42'45" W - 65.96'; N 9°51'15" W - 65.96'; N 1°58'30" W - 51.45'; N 3°42'45" E - 37.80'; N 7°33'45" E - 37.80'; N 10°27'00" E - 37.80'; N 12°22'00" E - 37.80'; N 13°19'00" E - 37.80' TO A POINT OF TANGENCY; THENCE CONTINUING ALONG THE FOREMENTIONED RIGHT-OF-WAY, N 13°29'00" E - 118.47' TO ORIGINAL G.L.O. MONUMENT CORNER NO. 2, U.S. SURVEY NO. 3246, BEING COMMON TO CORNER NO. 1, U.S. SURVEY NO. 3263; THENCE ALONG THE COMMON BOUNDARY OF U.S. SURVEY NO. 3246 AND U.S. SURVEY NO. 3263, S 76°35'15" E - 398.29' TO ORIGINAL G.L.O. MONUMENT CORNER 3, U.S. SURVEY NO. 3246, BEING COMMON TO CORNER NO. 4, U.S. SURVEY NO. 3263; THENCE ALONG THE EASTERLY BOUNDARY OF U.S. SURVEY NO. 3246, S 0°46'15" W - 768.90' TO CORNER NO. 4, U.S. SURVEY NO. 3246 BEING ON THE COMMON BOUNDARY LINE OF U.S. SURVEY NO. 3246 AND U.S. SURVEY NO. 2502; THENCE ALONG SAID COMMON BOUNDARY LINE, N 89°09'15" W - 150.97' TO CORNER NO. 1, U.S. SURVEY NO. 3246, THE TRUE POINT AND PLACE OF BEGINNING.
CONTAINING 6.749 ACRES, MORE OR LESS.

STATEMENT OF OWNERSHIP
I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNERS OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I (WE) HEREBY ADOPT THIS PLAT OF SUBDIVISION WITH MY (OUR) FREE CONSENT, AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS NOTED:
DATED 9/8/77, 19 Stanley A. Beall
OWNER
WITNESS John A. Beall
OWNER
WITNESS Patricia M. Beall
OWNER
NOTARY'S ACKNOWLEDGEMENT
SUBSCRIBED AND SWORN TO BEFORE ME THIS 8th DAY OF September, 1977.
Harold J. Beall MY COMMISSION EXPIRES 1979
NOTARY FOR ALASKA



CERTIFICATE OF APPROVAL BY THE BOARD
I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY AND BOROUGH OF JUNEAU, ALASKA AND THAT SAID PLAT HAS BEEN APPROVED BY THE PLATTING BOARD BY PLAT RESOLUTION NO. 502 DATED August 22, 1977 AND THAT THE PLAT SHOWN HEREON HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE DISTRICT RECORDING OFFICE, JUNEAU, ALASKA.
DATED Sept. 6, 1977
Robert H. Beall
CHAIRMAN
CITY AND BOROUGH OF JUNEAU
PLATTING BOARD
ATTEST:
W. M. Menzies
CLERK
CITY AND BOROUGH OF JUNEAU
PLATTING BOARD



- GENERAL NOTES**
- 1) BASIS OF ALASKA STATE PLANE GRID BEARINGS WAS U.S. C. & G. S. TRIANGULATION STATIONS "SALMON" & "CREEK".
 - 2) PROJECT SCALE FACTOR = 0.9999323.
 - 3) BOTH GRID COURSES AND G.L.O. GEODETIC COURSES ARE SHOWN IN PARENTHESES WHILE FIELD MEASURED AND/OR COMPUTED GRID COURSES ARE SHOWN WITHOUT PARENTHESES, THUSLY, (SOUTH - 769.36) S 0°46'15" E - 768.90'.
 - 4) MONUMENTS RECOVERED WERE ACCEPTED IN PLACE, SAVE AND EXCEPT RE-ESTABLISHED, BY OTHERS, CORNER 4, U.S.S. 3246 WHICH IS FELT TO BE ESTABLISHED IN AN INCORRECT POSITION AND WAS DISREGARDED.
 - 5) CLOSURE ALONG P/L 1-2, (R/W), WAS COMPASS ADJUSTED BASED ON RECOVERED MONUMENT POSITIONS.

**SUBDIVISION OF
U.S. SURVEY NO. 3246**
CITY & BOROUGH OF JUNEAU ALASKA

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA, AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THE MONUMENTS SHOWN THEREON ACTUALLY EXIST AS DESCRIBED, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT.

- SYMBOLS**
- BLM. MONUMENT RECOVERED THIS SURVEY
 - PRIMARY MONUMENT ESTABLISHED THIS SURVEY
 - BOUNDARY LINE
 - SECONDARY MONUMENT ESTABLISHED THIS SURVEY

A SUBDIVISION OF
U.S. SURVEY NO. 3246
LOCATED AT VANDERBILT HILL
CITY & BOROUGH OF JUNEAU ALASKA



(907) 586-0715
CDD_Admin@juneau.gov
www.juneau.org/community-development
155 Heritage Way • Juneau, AK 99801

July 1, 2025

MEMORANDUM

To: R&S Construction, Rob Worden
From: David Peterson, Planner II
Case Number: SMP2025-0001
Legal Description: Ravenwood Subdivision Lot 1
Parcel No.: 7B1001150063

RE: Browtine Subdivision Review Comments

The following consolidated review comments should be addressed prior to the plat being approved for preliminary plat approval/as a condition of preliminary plat approval. A further review of the preliminary plat may result in additional comments if new issues arise from changes made to the draft plat reviewed for this memorandum.

General Engineering

1. Please show electrical on construction plan.

Cartography

1. Show the 15' private access easement on adjacent Lot 2 (Ravenwood)
2. Include the address of record for Misty Sea Charters & Lodging LLC in the title block (1044 Timberwolf Ln, Juneau, AK, 99801).
3. A couple typos, In the legend, revise BLANKEY to BLANKET and Note 10, revise INTIAL to INITIAL.

[TO]

File No.: MIP2018 00xx

July 1, 2025

Page 2 of 2

DOT

1. Due to the size of the development the access will need to be built as an approach road, per the Alaska Pre-construction Manual which will put its width nearer to 32-34 feet wide. That process is started, of course, by applying for a driveway and approach road permit through our E-permits webpage and permitting platform.

Fire

1. NOTE: 42 dwellings will require automatic sprinkler systems in accordance with International Fire Code 903.3.1.1, due to single access.

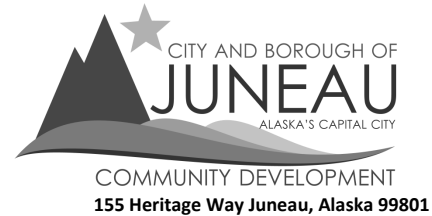
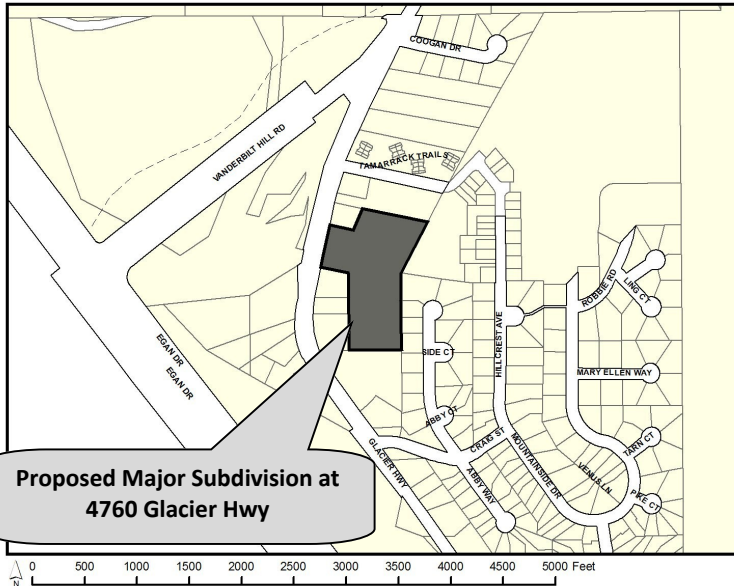
Zoning

1. Adjust scaling on the construction plans.
2. 24 foot travel way width required.
3. ROW needs to be 60 feet in width.

Invitation to Comment

On a proposal to be heard by the CBJ Planning Commission

Your Community, Your Voice



TO

A Major Subdivision for an Alternative Residential Subdivision has been submitted for consideration and public hearing by the Planning Commission for **creating 42 residential lots and a single parent lot at 4760 Glacier Highway** in a **D15 zone**.

PROJECT INFORMATION:

Project Information can be found at:

<https://juneau.org/community-development/short-term-projects>

PLANNING COMMISSION DOCUMENTS:

Staff Report expected to be posted **July 14, 2025** at

<https://juneau.org/community-development/planning-commission>

Find hearing results, meeting minutes, and more here, as well.

Now through July 7

Comments received during this period will be sent to the Planner, **David Peterson**, to be included as an attachment in the staff report.

July 8 — noon, July 18

Comments received during this period will be sent to Commissioners to read in preparation for the hearing.

HEARING DATE & TIME: 7:00 pm, July 22, 2025

This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting <https://juneau.zoom.us/j/85421744892> and use the Webinar ID: 854 2174 4892 OR join by telephone, calling: 1-253-215-8782 and enter the Webinar ID (above).

You may also participate in person in City Hall Assembly Chambers, 155 Heritage Way Juneau, Alaska.

July 26

The results of the hearing will be posted online.

FOR DETAILS OR QUESTIONS,

Phone: (907)586-0753 ext. 4132

Email: pc_comments@juneau.gov or David.Peterson@juneau.gov

Mail: Community Development, 155 Heritage Way, Juneau AK 99801

Case No.: **SMP2025 0001**

Parcel No.: **7B1001150063**

CBJ Parcel Viewer: <http://epv.juneau.org>

Printed June 17, 2025





**PLANNING COMMISSION STAFF REPORT
STATE PROJECT REVIEW CSP2025 0001
HEARING DATE: JULY 22, 2025**

(907) 586-0715

CDD_Admin@juneau.gov

www.juneau.org/community-development

155 Heritage Way • Juneau, AK 99801

DATE: July 10, 2025
TO: Mandy Cole, Chair, Planning Commission
BY: Brandon Robinson, Planner II *B. Robinson*
THROUGH: Jill Lawhorne, Director, AICP

PROPOSAL: Conversion to a Continuous Green T (CGT) Intersection at Egan Drive and Vanderbilt Hill Road.

STAFF RECOMMENDATION: Approval

KEY CONSIDERATIONS FOR REVIEW:

- Relatively High Incidence of Certain Types of Crashes at Intersection
- Project is Projected to Reduce Identified Types of Crashes
- Project is Projected to Improve Overall Intersection Efficiency

GENERAL INFORMATION

Property Owner	State of Alaska
Applicant	State of Alaska DOT & PF
Property Address	Mile point 4.86 Egan Drive & Mile point 3.48 Glacier Highway/Lemon Road
Legal Description	Mile point 4.86 Egan Drive & Mile point 3.48 Glacier Highway/Lemon Road
Parcel Number	0
Zoning	None
Land Use Designation	DOT Right-Of-Way
Lot Size	N/A
Water/Sewer	N/A
Access	N/A
Existing Land Use	Right-Of-Way
Associated Applications	None

ALTERNATIVE ACTIONS:

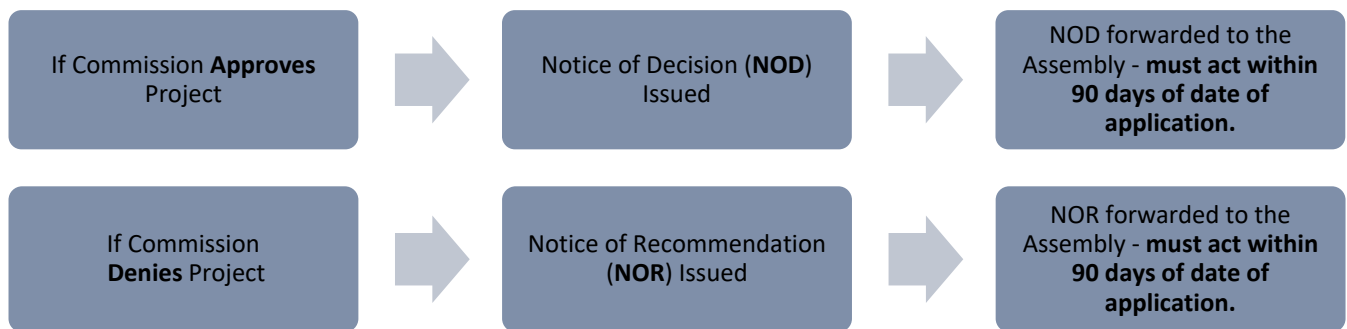
1. **Amend:** amend the recommendation to include conditions and recommend approval to the Assembly.
2. **Deny:** recommend denial of the proposed project. Planning Commission must make its own findings.
3. **Continue:** continue the hearing to a later date if determined that additional information or analysis is needed to make a decision, or if additional testimony is warranted.

ASSEMBLY ACTION REQUIRED:

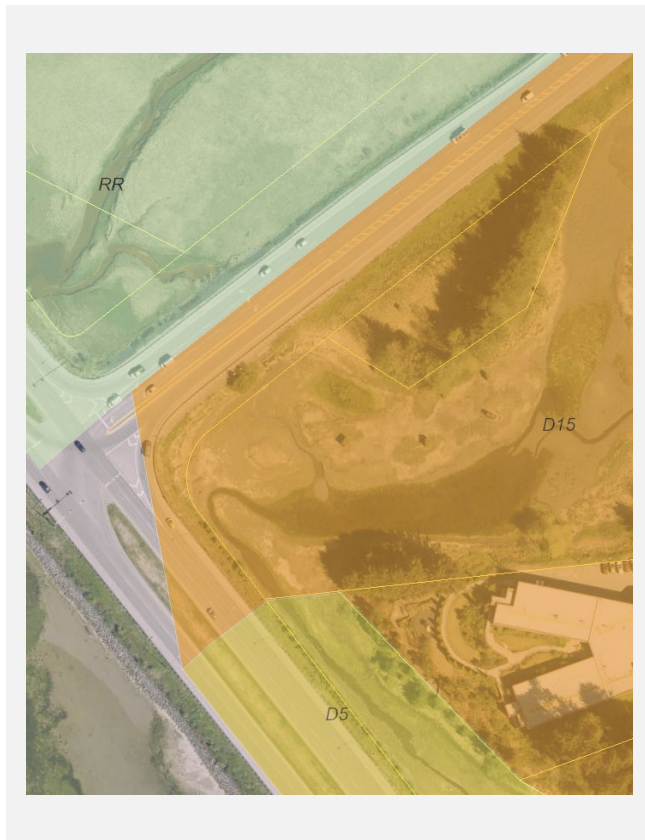
The Notice of Decision or Notice of Recommendation will be forwarded to the Assembly.

STANDARD OF REVIEW:

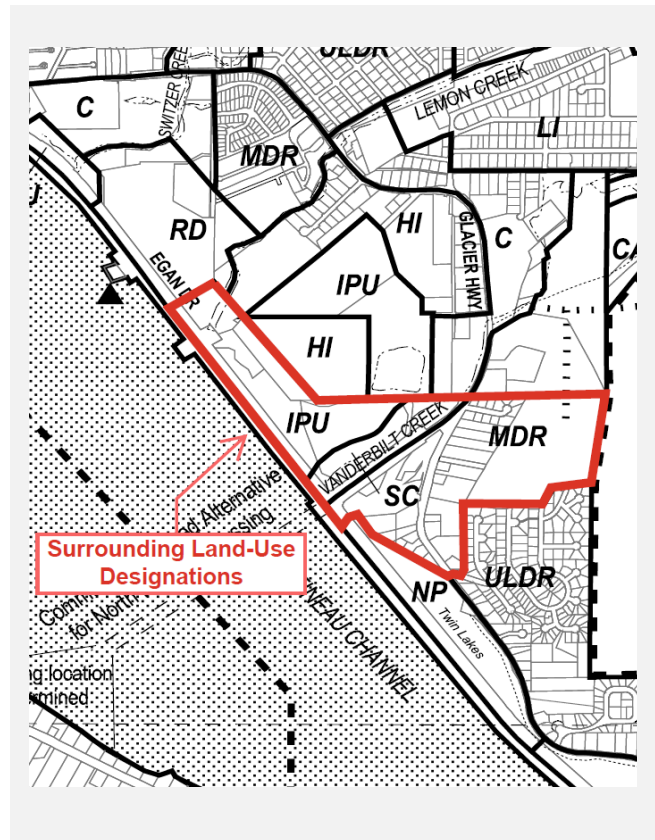
- Quasi-judicial decision
- Requires five (5) affirmative votes for approval
- Code Provisions:
 - CBJ 49.15.580(b)
 - 49.35 Article II
 - CBJ 49.80



CURRENT ZONING MAP



LAND USE DESIGNATION MAP



The Commission shall hear and decide the case per CBJ 49.15.580(b) - State Project Review: *The commission shall review proposed Alaska State capital improvement projects for consistency with this title pursuant to AS 35.30.010 and may impose conditions on and modifications to such projects. If the commission approves or approves with conditions or modifications, a notice of decision shall be issued. A notice of decision becomes final 90 days from the date the project was submitted unless modified or disapproved by the assembly. If the commission disapproves, a notice of recommendation and draft resolution shall be forwarded to the assembly for further action.*

SURROUNDING LAND USES AND ZONING

Direction	Zoning District	Land Use
North	RR	Undeveloped
South	N/A	Undeveloped
East	D15	Undeveloped
West	N/A	Undeveloped

BACKGROUND INFORMATION

Project Description – The applicant applied for a review of a project which would alter the signalized intersection at Egan Drive and Vanderbilt Hill Road to convert it to a Continuous Green T (CGT) intersection. This change allows southbound Egan through traffic to continue instead of waiting at the light for left-turning traffic from Vanderbilt Hill Road. Meanwhile, left-turning traffic from Vanderbilt Hill Road will merge with southbound Egan traffic using a channelized lane after turning left and clearing the intersection (**Attachment A**).

This project is projected to reduce the risk of accidents at the intersection and improve traffic flow, and has an estimated cost of \$2,000,000 that will include the following work:

- Remove the traffic signals on Egan Drive southbound, converting these traffic lanes to “continuous green” free-flow movements through the intersection.
- Construct an acceleration lane on Egan Drive southbound for merging left-turn traffic from Vanderbilt Hill Road.
- Widen the left-turn lane at the intersection on Egan Drive southbound to provide a six-foot painted median safety buffer to the adjacent “continuous green” traffic lane.
- Construct a raised median in the intersection to guide left-turn traffic from Vanderbilt Hill Road merging onto the new acceleration lane on Egan Drive southbound.
- Construct a raised median and remove a left-turn lane on Vanderbilt Hill Road, to align with the single lane left-turn onto Egan Drive southbound.
- Remove the south traffic signal for Vanderbilt Hill Road’s left-turn lane.
- Modify the existing storm-drain system in the vegetated median.

Background – As a key part of traffic circulation in the Lemon Creek area and a primary route for commercial traffic to and from the Lemon Creek Industrial area, the intersection has a history of elevated crash rates related to signalized turning across the major lanes of traffic on Egan Drive. The project is expected to reduce the incidence of rear-end, angle, and sideswipe crashes for the southbound through-lanes, and may also result in reductions to crashes in the northbound Egan direction. The project was nominated by the region for funding through the Statewide Highway Safety Improvement Program. A summary of previous safety-related improvements in the project area is in the table below.

Item	Summary
Project: PMS-093-2 (II) -- Egan Expressway Raised Pavement Markers (1982)	Project Area Received Raised Pavement Markers and Vertical Surface Reflectors
Project: F-093-2 (9) -- Egan Expressway Intersection Improvements – Grading, Drainage, Illumination, Signalization, Bridge, and Pedestrian Access (1983)	General Intersection Improvements Including Grading, Paving, Drainage, Illumination, and Signalization

Project: F-093-2(25) (69295) -- Egan Expressway Pavement Rehabilitation (1989)	Pavement Rehabilitation, Striping, and Reflective Pavement Marker Installation
Project: NH-093-2(32) (71667) -- Egan Drive Stud Wear Rutting Repair (1995)	Asphalt Rehabilitation, Shoulder Repair, Intersection Striping, Signalization Improvements, Signage Improvements
Project: NH-093-2(39) (68047) -- Juneau Areawide Paving (2001)	Pavement Improvements Including Grinding, Patching, Transitions, and Edge Treatment; Striping Improvements
Project: EBL-0932(050) (67402) -- Egan Drive Additional Illumination (2014)	Illumination Improvements
Project: NH-0932(049) (68129/67595) -- Egan Drive Pavement Rehabilitation (2016)	Pavement Rehabilitation; Striping Improvements
Project: NH-0932(049) (68129) -- Egan Drive Guardrail Replacements (2019)	Guardrail Replacement
Project: SFHWY00241 (3243) -- Resurface Glacier Highway (2021)	Paving, Striping, Guardrails, and Drainage

Current Conditions – Currently, the intersection of Vanderbilt Hill Road and Egan Drive consists of four lanes of traffic (two lanes in each direction) on Egan Drive, with one left-turn lane from Egan onto Vanderbilt Hill Road (southbound), and one right-turn lane from Egan to Vanderbilt Hill Road (northbound). Vanderbilt Hill Road has two left-turn lanes onto Egan Drive southbound, and one right-turn lane northbound. The intersection is controlled by an all-way traffic signal.

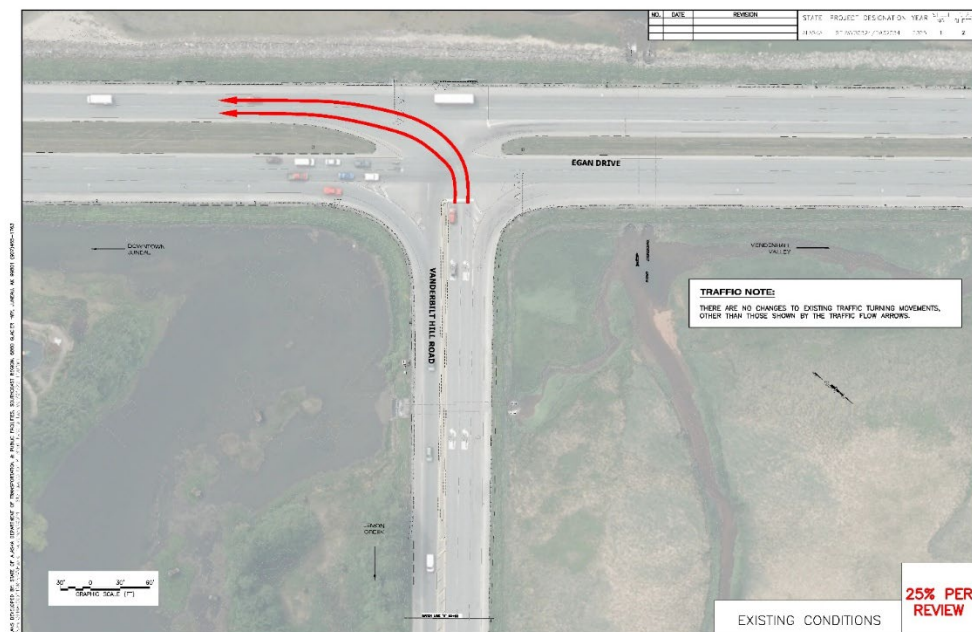


Figure 1: Existing Conditions Showing two left-turn lanes from Vanderbilt Hill Rd. onto Egan Drive.

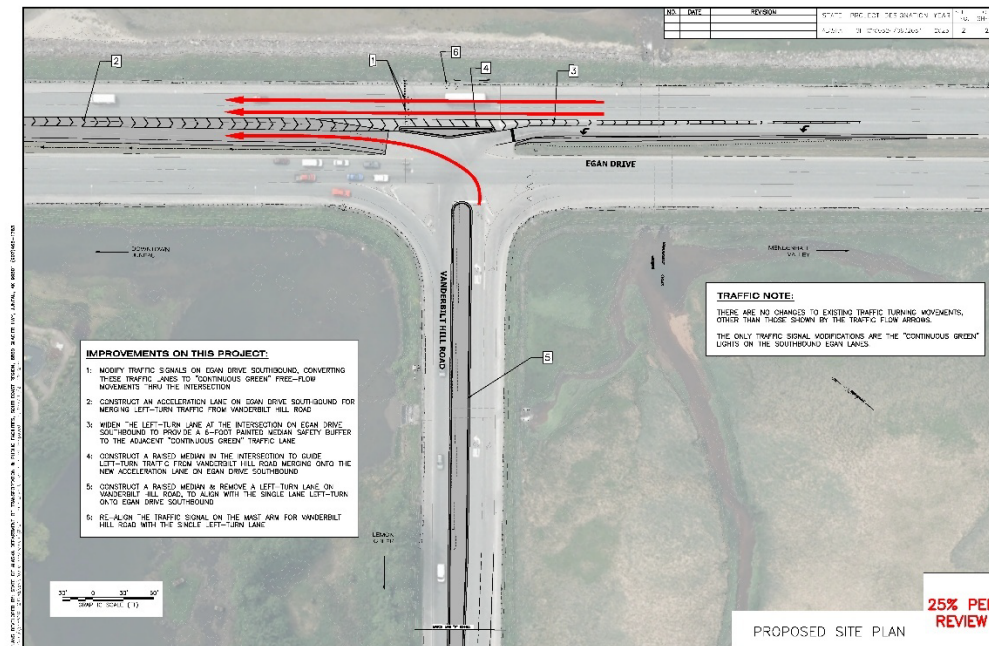


Figure 2: Project Proposal Showing continuous traffic flow on Egan (Southbound) and one left-turn lane from Vanderbilt Hill Rd. onto Egan Drive.

ZONING ANALYSIS

CBJ 49.05.100 - Purpose and intent. The purpose and Intent of Title 49 Land Use Code is:

- (1) To achieve the goals and objectives, and implement the policies, of the Juneau comprehensive plan, and coastal management program;*
- (2) To ensure that future growth and development in the City and Borough is in accord with the values of its residents;*
- (3) To identify and secure, for present and future residents, the beneficial impacts of growth while minimizing the negative impacts;*
- (4) To ensure that future growth is of the appropriate type, design and location, and is served by a proper range of public services and facilities such as water, sewage, and electrical distribution systems, transportation, schools, parks and other public requirements, and in general to promote public health, safety and general welfare;*
- (5) To provide adequate open space for light and air; and*
- (6) To recognize the economic value of land and encourage its proper and beneficial use.*

Other Permit Required – None.

Roadway Construction Standard Waivers – CBJ 49.35.240 Table standards have been met.

Roadway Classification Maps – Egan Drive: Arterial; Vanderbilt Hill Rd.: Collector.

Hazard Areas – None Mapped.

COMMUNITY SERVICES

Service	Summary
Urban Service Boundary	Within the Urban Service Boundary
Water/Sewer	CBJ/CBJ
Fire Service Area	CBJ
Schools	N/A
Recreation	N/A

ENVIRONMENTAL, CONSERVATION, HISTORIC, AND ARCHEOLOGICAL RESOURCES

The applicant notes that there will be an erosion and sediment control plan (ESCP) put in place with the project that will minimize any off-site impacts (**Attachment A**). The table below summarizes Conservation, Historic, and Archeological Resources which may be affected by the CGT Intersection Proposal.

Resource	Summary
Conservation Areas	All Work Will Take Place Within Existing Right-of-Way, No Significant Impact Projected
Wetlands	All Work Will Take Place Within Existing Right-of-Way, No Significant Impact Projected. The ESCP included in the scope of work for the project will minimize off-site impacts.
Anadromous	There is an anadromous stream within the proposal's work area; however, it is exempt from 49.70.330 provisions via 49.70.330(c). The ESCP included in the scope of work for the project will minimize off-site impacts.
Impaired Waterbodies	All Work Will Take Place Within Existing Right-of-Way, No Significant Impact Projected. The ESCP included in the scope of work for the project will minimize off-site impacts.
Historic	All Work Will Take Place Within Existing Right-of-Way, No Significant Impact Projected
Archeological	All Work Will Take Place Within Existing Right-of-Way, No Significant Impact Projected
Comprehensive Plan View Sheds	All Work Will Take Place Within Existing Right-of-Way, No Significant Impact Projected

CONFORMITY WITH ADOPTED PLANS

2013 COMPREHENSIVE PLAN VISION: *The City and Borough of Juneau is a vibrant State Capital that values the diversity and quality of its natural and built environments, creates a safe and satisfying quality of life for its diverse population, provides quality education and employment for its workers, encourages resident participation in community decisions and provides an environment to foster state-wide leadership.*

2013 COMPREHENSIVE PLAN - The proposed project is in compliance with the 2013 Comprehensive Plan.			
Chapter	Page No.	Item	Summary
7	89	Standard Operating Procedure Two (SOP2)	The proposed project is aligned with SOP2 in that the plans state that the area will be revegetated upon completion.
8	101	Policy Direction	The proposed project facilitates a safer, more efficient, and more convenient transportation system.
8	116	Subarea Transportation Needs	The Plan calls for CBJ and ADOT&PF to address transportation problems within and between major concentrations of the population, including those in the Lemon Creek area.

2018 LEMON CREEK AREA PLAN - The proposed project complies with the Lemon Creek Area Plan.			
Chapter	Page No.	Item	Summary
5	41	Policy Direction	The proposed project is conformant with the policy directions of Chapter 5, as it will support neighborhood success by improving safety and efficiency with regard to the transportation network.

AGENCY REVIEW

CDD conducted an agency review comment period between June 10, 2025, and July 8, 2025. Agency review comments can be found in **Attachments B, C, and D**.

Agency	Summary
Building Division	No Concerns
General Engineering	No Concerns
Fire Department	No Concerns

PUBLIC COMMENTS

CDD conducted a public-comment period between June 10, 2025, and July 18, 2025. Public notice was mailed to property owners within 500 feet of the subject area (**Attachment E**). A public-notice sign was also posted on-site two weeks prior to the scheduled hearing (**Attachments F, G**). Public comments that were received as of the drafting of this report are summarized in the table below, as well as placed as attachments (**Attachments H, I**).

Name	Summary
Don and Pat Ingledue	Long-time residents; Have not experienced any issues at this intersection; Merging to the right using the channelized way may be more difficult than current configuration; Funds may be better spent elsewhere.
Chuck Guthrie	Felt that the flyer and website did not have enough information to understand why the project was necessary.

FINDINGS

In accordance with CBJ 49.15.580 staff finds the proposed Conversion to a Continuous Green T (CGT) Intersection at Egan Drive and Vanderbilt Hill Road complies with Title 49 Land Use Code and is in general conformity with adopted plans, specifically the 2013 Comprehensive Plan and the 2018 Lemon Creek Area Plan.

RECOMMENDATION

Staff recommends the Planning Commission adopt the Director's analysis and findings and forward their notice of decision to the CBJ Assembly for the Conversion to a Continuous Green T (CGT) Intersection at Egan Drive and Vanderbilt Hill Road.

STAFF REPORT ATTACHMENTS

Item	Description
Attachment A	Application Packet
Attachment B	Building Division Commentary
Attachment C	General Engineering Commentary
Attachment D	Fire Department Commentary
Attachment E	Abutters Notice
Attachment F	Public Notice Email to Applicant
Attachment G	Public Notice Sign Photo
Attachment H	Public Comment_6-12-25_Guthrie
Attachment I	Public Comment_6-17-25_Ingledue



DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

PROPERTY LOCATION	
Physical Address Milepoint 4.86 Egan Drive & Milepoint 3.48 Glacier Highway/Lemon Road	
Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) 58.345298, -134.500459	
Parcel Number(s)	
☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____	
LANDOWNER/ LESSEE	
Property Owner State of Alaska	Contact Person Joel Osburn, PE - Project Manager
Mailing Address P.O. Box 112506 Juneau, AK 99811-2506	Phone Number(s) 907.465.4409 (wk)
E-mail Address joel.osburn@alaska.gov	907.209.7897 (cell)
LANDOWNER/ LESSEE CONSENT	
Required for Planning Permits, not needed on Building/ Engineering Permits.	
Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.	
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows:	
A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission.	
B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.	
Joel Osburn Landowner/Lessee (Printed Name) Project Manager Title (e.g.: Landowner, Lessee)	
X Landowner/Lessee (Signature) 5/22/25 Date	
Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)	
X _____ Landowner/Lessee (Signature) Date	
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.	
APPLICANT	
If same as LANDOWNER, write "SAME"	
Applicant (Printed Name) Same	Contact Person
Mailing Address	Phone Number(s)
E-mail Address	
X _____ Applicant's Signature Date of Application	

To be completed by Applicant

DEPARTMENT USE ONLY BELOW THIS LINE-----

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Case Number CSP25-002	Intake Initials
Date Received 6/2/25	



CITY/STATE PROJECT AND LAND ACTION REVIEW APPLICATION

See reverse side for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

To be completed by Applicant	PROJECT SUMMARY	
	The Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to convert the existing signalized intersection at Egan Drive & Vanderbilt Hill Road in Juneau, Alaska into a Continuous Green T (CGT) Intersection as an HSIP safety improvement project.	
	TYPE OF PROJECT REVIEW: ☒ City Project Review ☒ State Project Review	
	PROJECT NUMBERS ASSOCIATED WITH PROPOSAL:	
	Is this project associated with any other Land Use Permits? YES Case No.: NO Capital Improvement Program # (CIP) _____ Local Improvement District # (LID) _____ State Project # <u>SFWHY00524</u>	
ESTIMATED PROJECT COST: \$ \$2,000,000		
ALL REQUIRED MATERIALS ATTACHED		
☒ Complete application ☒ Pre-Application notes (if applicable) ☒ Narrative including: Current use of land or building(s) Proposed use of land or building(s) How the proposed project complies with the Comprehensive Plan How the proposed project complies with the Land Use Code (Title 49) ☒ Site Plan (details on page 2)		

NOTE: This application is required even if the proposed project is associated with other Land Use permits.

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

CITY/STATE PROJECT FEES	Fees	Check No.	Receipt	Date
Application Fees (≥\$2.5M)	\$ <u>0</u>			
Pub. No. Sign Fee	\$ <u>50.00</u>			
Pub. No. Sign Deposit	\$ <u>100.00</u>			
TOTAL FEES	\$ <u>150.00</u>			

This form and all documents associated with it are public record once submitted.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Case Number CSP25-001	Date Received 6/2/25
---------------------------------	--------------------------------

City/State Project and Land Action Review Information

City and State project review is outlined in CBJ 49.15.580

Each application for a City/State Project is reviewed by the Planning Commission at a public hearing. The permit procedure is intended to provide the Commission the flexibility necessary to make recommendations tailored to individual applications.

Application: An application for a City/State Project Review will not be accepted by the Community Development Department until it is determined to be complete. The items needed for a complete application are:

1. **Forms:** Completed City/State Project Review Application and Development Permit Application forms.
2. **Fees:** No application fee required for projects that cost less than \$2.5 million. For projects costing more than this amount, the fee is \$1,600.00. All City/State Project and Land Action Applications must pay public notice sign fees. All fees are subject to change.
3. **Project Narrative:** A detailed narrative describing the project.
4. **Plans:** All plans are to be drawn to scale and clearly show the items listed below:
 - a. Plat, site plan, floor plan and elevation views of existing and proposed structures and land;
 - b. Existing and proposed parking areas, including dimensions of the spaces, aisle width and driveway entrances;
 - c. Proposed traffic circulation within the site including access/egress points and traffic control devices;
 - d. Existing and proposed lighting (including cut sheets for each type of lighting);
 - e. Existing and proposed vegetation with location, area, height and type of plantings; and,
 - f. Existing physical features of the site (i.e. drainage, eagle trees, hazard areas, salmon streams, wetlands, etc.)

Document Format: All materials submitted as part of an application shall be submitted in either of the following formats:

1. Electronic copies in the following formats: .doc, .txt, .xls, .bmp, .pdf, .jpg, .gif, .xlm, .rtf (other formats may be preapproved by the Community Development Department).
2. Paper copies 11" X 17" or smaller (larger paper size may be preapproved by the Community Development Department).

Application Review & Hearing Procedure: Once the application is determined to be complete, the Community Development Department will initiate the review and scheduling of the application. This process includes:

Review: As part of the review process the Community Development Department will evaluate the application for consistency with all applicable City & Borough of Juneau codes and adopted plans. Depending on unique characteristics of the permit request the application may be required to be reviewed by other municipal boards and committees. Review comments may require the applicant to provide additional information, clarification, or submit modifications/alterations for the proposed project.

Hearing: All City/State Project Review Permit Applications must be reviewed by the Planning Commission. Once an application has been deemed complete and has been reviewed by all applicable parties the Community Development Department will schedule the requested permit for the next appropriate meeting. The Planning Commission will make a recommendation based on staff's analysis and forward it to the Assembly for final approval/denial.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Transportation and
Public Facilities

SOUTHCOST REGION
Design & Engineering Services

6860 Glacier Highway
PO Box 112506
Juneau, AK 99811-2506
907-465-4409

3/24/2025

Re: SFHWY00524 / 0932054
HSIP JNU Vanderbilt Continuous Green T

Certified Mail #: _____
Return Receipt Requested

Scott Ciambor, Planning Manager
Community Development Department – City & Borough of Juneau, AK
230 S. Franklin Street, 4th Floor Marine View Building
Juneau, AK 99801

Mr. Ciambor,

The enclosed plans are submitted for your review and comment, and for determination of compliance with local planning and zoning ordinances. Under AS 35.30.020, the Department must comply with local planning and zoning ordinances and other regulations in the same manner and to the same extent as other landowners. If you believe the Department's construction of this project would result in a violation of planning, zoning, or other regulations generally applicable to landowners, please identify the portions of the project that would be in violation, and the specific planning, zoning, or other regulations that you believe would be violated.

Pursuant to AS 35.30.010, you have 90 days from delivery of the plans to provide comments on the project and to notify the Department whether the project violates any planning, zoning, or other regulations. If comments are not received within this time frame, the Department is authorized to proceed with the project.

Thank you for attention to this matter.

Respectfully,

A handwritten signature in black ink, appearing to read "Joel Osburn".

Joel Osburn, P.E.
DOT&PF Engineering Manager

"Keep Alaska Moving through service and infrastructure."

Enclosures:

- 25% PER Project Plans
- CBJ City/State Project and Land Action Review Application

The Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to convert the existing signalized intersection at Egan Drive & Vanderbilt Hill Road in Juneau, Alaska into a Continuous Green T (CGT) Intersection. A CGT intersection allows through traffic to continue instead of waiting for an all-way stop at a turn signal.

The proposed project would:

- Remove the traffic signals on Egan Drive southbound, converting these traffic lanes to “continuous green” free-flow movements thru the intersection
- Construct an acceleration lane on Egan Drive southbound for merging left-turn traffic from Vanderbilt Hill Road
- Widen the left-turn lane at the intersection on Egan Drive southbound to provide a 6-foot painted median safety buffer to the adjacent “continuous green” traffic lane
- Construct a raised median in the intersection to guide left-turn traffic from Vanderbilt Hill Road merging onto the new acceleration lane on Egan Drive southbound
- Construct a raised median & remove a left-turn lane on Vanderbilt Hill Road, to align with the single lane left-turn onto Egan Drive southbound
- Remove the south traffic signal for Vanderbilt Hill Road left-turn lane
- Modify existing storm drain system in the vegetated median

Reference attached graphics which illustrate the existing & proposed project conditions at this intersection. Also reference the website for other project documents & information.

Website Link: XXXX

Project History

The Egan Drive and Vanderbilt Hill Road intersection is a key part of the traffic circulation in the Lemon Creek area for a high number of residents and is the primary route for commercial traffic to and from the Lemon Creek industrial area. This 3-way “tee” intersection has a history of elevated crash rates related to signalized turning movements across the major traffic lanes on Egan Drive.

The Southcoast DOT Traffic Section evaluated several safety improvements, and a CGT design was preferred.

This project will primarily reduce the incidence of rear-end, angle, and sideswipe crashes for the southbound Egan thru lanes by converting them to continuous green lanes with no conflicting movements. Reductions to crashes in the northbound Egan direction may also result since the traffic signal controller will be better able to optimize for gaps, considering one direction of traffic instead of two. Thereby reducing the number of vehicles forced into the dilemma zone during signal max-outs.

In addition the existing SB left-turn and new SB median acceleration lane will be buffered slightly from the SB thru lanes reducing the incidence of sideswipe crashes between the

movements. A mountable raised concrete median will be installed in this buffer space to aid delineation. The benefits of a CGT to this intersection are as follows:

- Improved Safety: Channelization of left-turn vehicles from Vanderbilt Hill Road will reduce the potential for angle crashes
- Free-flow in one direction: Travel on Egan Drive southbound never stops, which improves traffic signal synchronization and reduces corridor travel times.
- Increased Efficiency: With Egan Drive thru lanes in “continuous green” free-flow, more green time can be provided to the other signalized turning movements – reducing delays at the intersection.

The project was nominated by the Region for funding thru the Statewide HSIP (Highway Safety Improvement Program). All submitted HSIP projects are scored by the State Traffic & Safety Office, and funded in order of their likelihood to eliminate serious crashes and fatalities. This project was successfully awarded HSIP funds with Design in FY24 – 25 & Construction slated for FY26.

ANTICIPATED PROJECT SCHEDULE

Design Completion: August, 2025

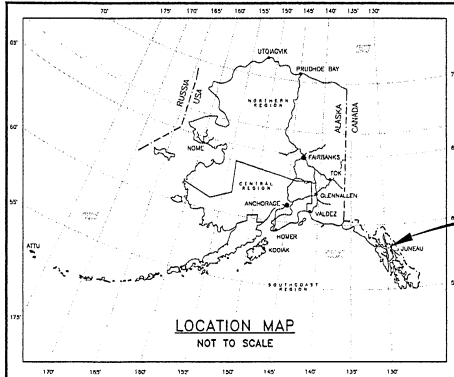
Construction: Spring/Summer, 2026

CONTACT INFORMATION

Please feel free to contact the following individuals for questions or submission of comments or suggestions. Comments are requested by XXXX date.

Project Manager: Joel Osburn, PE, Phone, Email

Environmental Analyst: Conner Brown, Phone, Email



PROJECT LOCATION

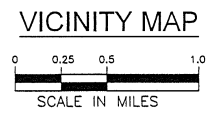
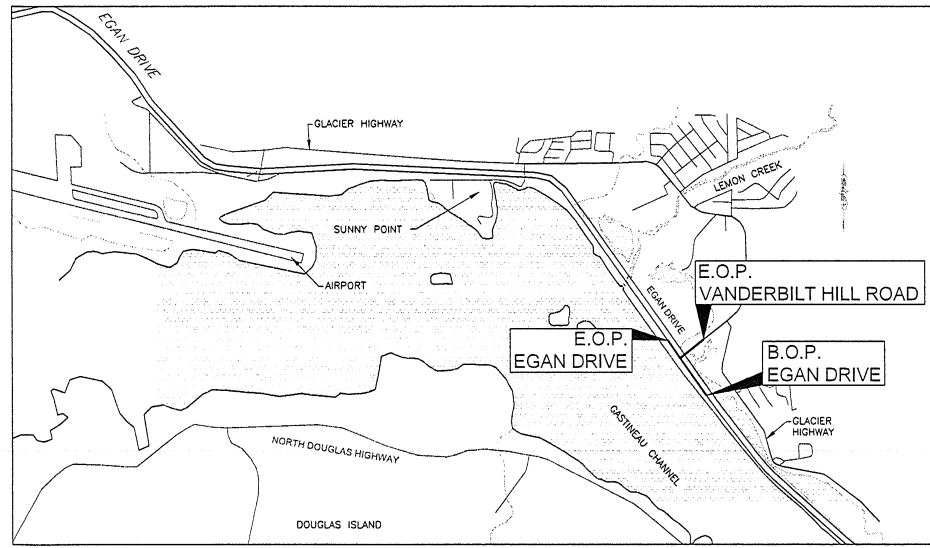
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

PROPOSED HIGHWAY PROJECT
HSIP: JNU VANDERBILT
CONTINUOUS GREEN T
PROJECT NO. SFHWY00524/0932054
ROADWAY WIDENING, PAVING, STRIPING

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFWY00524/0932054	2025	A1	20
CDS ROUTE: 296000			MILEPOINT: 4.532 TO 4.955				
CDS ROUTE: 296229			MILEPOINT: 3.175 TO 3.332				

DESIGN DESIGNATIONS	
PROJECT TYPE	PM
FUNCTIONAL CLASS	URBAN ARTERIAL
ADT (2022)	18,700
ADT (2035)	19,916
DHV (2022)	2,076
DHV (2035)	2,211
PERCENT TRUCKS (T)	4.19%
DIRECTIONAL SPLIT (D)	63%
DESIGN SPEED (V)	45/55 MPH
EASLs	7,450,000

PROJECT SUMMARY	
WIDTH OF ACCELERATION LANE ON EGAN DRIVE	12'
LENGTH OF ACCELERATION LANES ON EGAN DRIVE	2,093'
LENGTH OF VANDERBILT HILL ROAD WORK	778'
TOTAL LENGTH OF PROJECT	2,871'
AREA OF DISTURBANCE	0.62 ACRES



JOEL OSBURN, P.E., PROJECT MANAGER
THOMAS FAGNANT, DESIGNER

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
&
PUBLIC FACILITIES

APPROVED BY: **PER** DATE _____

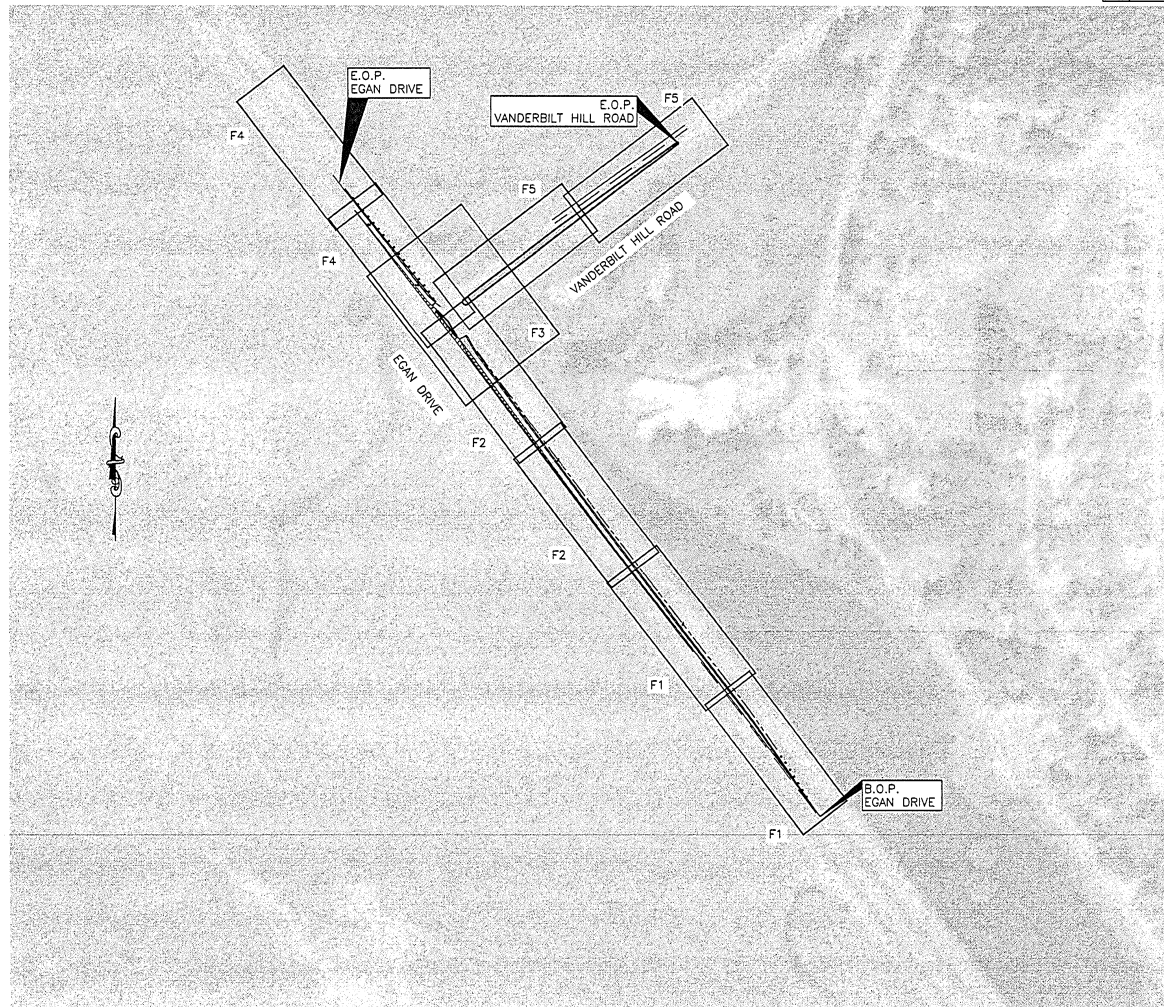
Kirk Miller, P.E.
Preconstruction Engineer, Southcentral Region
ACCEPTED FOR CONSTRUCTION: _____ DATE _____

Christopher Gains, P.E., C.M.
Regional Director, Southeast Region

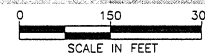
HWY5 TITLE SHEET
C:\Users\jgagnant\OneDrive\Documents\HWY524_A1-A1 Title Page\1225 60x30gm

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOAST REGION, 6960 GLACIER HWY., JUNEAU, AK 99801 (907)465-1763
 D:\Vms\SPHWY00524\PlanSet\Vanderbilt Hill Road\A2.dwg, 1/4/17/25 09:31pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFWHY00524/0932054	2025	A2	20



KEY MAP



INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2	SHEET LAYOUT & INDEX
A3	LEGEND
A4	SURVEY CONTROL SHEET
B1	TYPICAL SECTIONS
C1	ESTIMATE OF QUANTITIES
D1	MISCELLANEOUS DETAILS & SUMMARIES
F1-F5	PLAN VIEW
H1-H5	STRIPING PLAN VIEW
Q1	ESCP
T1-T2	TRAFFIC CONTROL PLAN

GENERAL NOTES:

1. CONTAIN ALL CONSTRUCTION WITHIN THE RIGHT-OF-WAY. DO NOT DISPOSE OF EXCESS MATERIAL WITHIN THE RIGHT-OF-WAY, UNLESS SPECIFICALLY CALLED FOR IN THE PLANS.
2. SEE SPECIAL PROVISIONS SUBSECTION 643-3.02 FOR LIMITATIONS TO TRAFFIC RESTRICTIONS.

THE FOLLOWING ALASKA STANDARD PLANS APPLY TO THIS PROJECT:
 C-04.12 C-06.00 D-26.04 T-21.04
 C-05.20 D-22.01 T-20.04 T-22.04

SHEET LAYOUT & INDEX

PER
REVIEW

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOST REGION, 5850 GLADIER HWY, JUNEAU, AK 99801 (907)465-1763
 D:\p\05190524\05190524.dwg (Sheet) 14/12/25 05:31pm

RECOVERED		SET	EXISTING		PROPOSED		NO.		DATE	REVISION		STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
												ALASKA	SFHNY00524/0932054	2025	A3	20
													</			

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOST REGION, 6860 GLACIER HWY, JUNEAU, AK 99801 (907)465-1763
C:\Users\SFH\Documents\Projects\UNUS24_A4-A4_Thru_Fish\12\0523pm

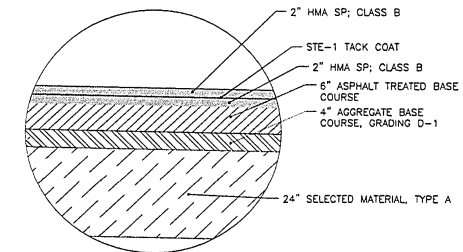
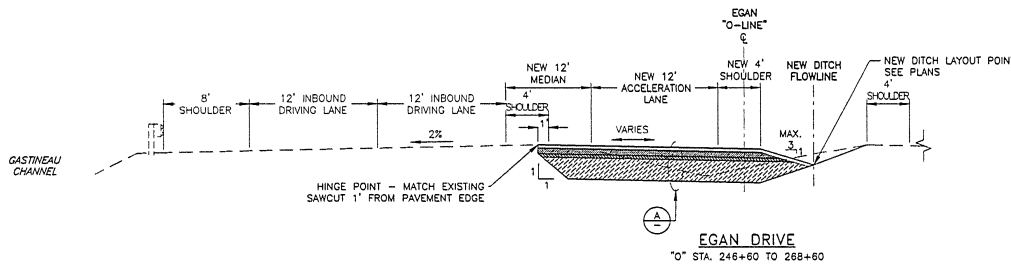
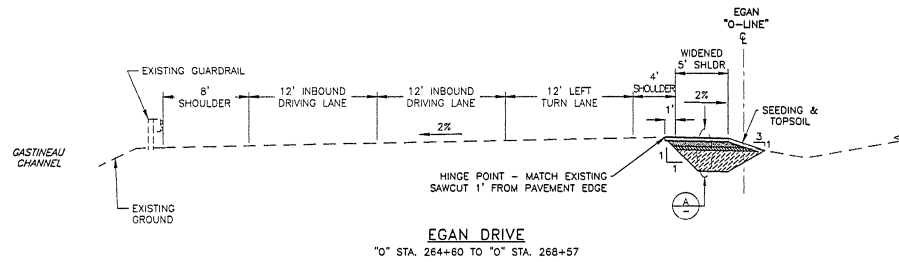
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFH\WY00524/0932054	2025	AA	20

PLACEHOLDER

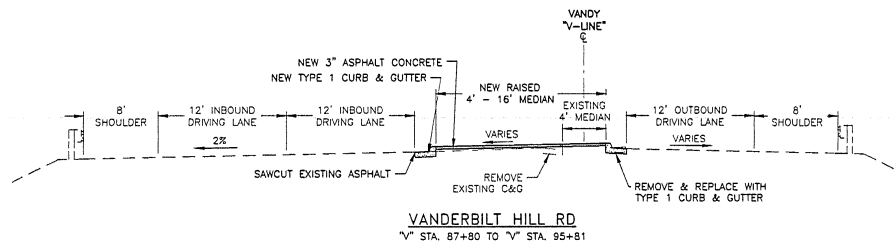
SURVEY CONTROL SHEET

PER
REVIEW

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFWY00524/0932054	2025	B1	20



STRUCTURAL SECTION
NEW PAVEMENT



TYPICAL SECTIONS

PER
REVIEW

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFH\WY00524/0932054	2025	C1	20

ESTIMATE OF QUANTITIES			
ITEM NO.	PAY ITEM	PAY UNIT	QUANTITY
201.0003.0000	CLEARING AND GRUBBING	ACRE	0.62
202.0002.0000	REMOVAL OF PAVEMENT	S.Y.	310
202.0008.0000	REMOVAL OF INLET	EACH	2
202.0009.0000	REMOVAL OF CURB AND GUTTER	L.F.	684
203.0003.0000	UNCLASSIFIED EXCAVATION	C.Y.	2030
203.0005.000A	BORROW, TYPE A	C.Y.	1790
301.0002.0001	AGGREGATE BASE COURSE, GRADING D-1	C.Y.	310
303.2003.0000	DITCH RECONDITIONING	L.F.	1660
306.0001.0000	ATB	TONS	1500
401.0004.582B	ASPHALT BINDER, GRADE PG 58-28E	TONS	57
402.0001.5TE1	STE-1 ASPHALT FOR TACK COAT	TONS	1.3
406.2001.000B	HMA, SP, CLASS B	TONS	990
603.0021.0012	CORRUGATED POLYETHYLENE PIPE 12 INCH	L.F.	17
604.0005.000A	INLET, TYPE A	EACH	2
609.0002.0001	CURB AND GUTTER, TYPE 1	L.F.	1780
615.0001.0000	STANDARD SIGN	S.F.	12
640.0001.0000	MOBILIZATION & DEMOBILIZATION	L.S.	ALL REQ'D
642.0001.0000	CONSTRUCTION SURVEYING	L.S.	ALL REQ'D
643.0002.0000	TRAFFIC MAINTENANCE	L.S.	ALL REQ'D
643.0003.0000	PERMANENT CONSTRUCTION SIGNS	L.S.	ALL REQ'D
643.0025.0000	TRAFFIC CONTROL	C.S.	ALL REQ'D
643.2005.0000	PUBLIC INFORMATION PROGRAM	L.S.	ALL REQ'D
658.0001.0000	EROSION, SEDIMENT, AND POLLUTION CONTROL WITHOUT CGP COVERAGE	L.S.	ALL REQ'D
658.0002.0000	ESCP CHANGES BY DIRECTIVE	C.S.	ALL REQ'D
660.2003.0000	TRAFFIC SIGNAL SYSTEM MODIFICATIONS	L.S.	ALL REQ'D
660.2004.0000	ADJUST JUNCTION BOX	EACH	2
670.0001.0000	PAINTED TRAFFIC MARKINGS	L.S.	ALL REQ'D

BASIS OF ESTIMATE		
ITEM NO.	ITEM DESCRIPTION	ESTIMATING FACTOR
306.0001.0000	ATB	150 LB/C.F.
401.0004.582B	ASPHALT BINDER, GRADE PG 58-28E	5.8% OF ITEM 401.2006.0000B
402.0001.5TE1	STE-1 ASPHALT FOR SEAL COAT, CSS-1	0.1 GAL/S.Y. & 240 GAL/TON
406.2006.000B	HMA, SP, CLASS B	150 LB/C.F.

ESTIMATE OF QUANTITIES

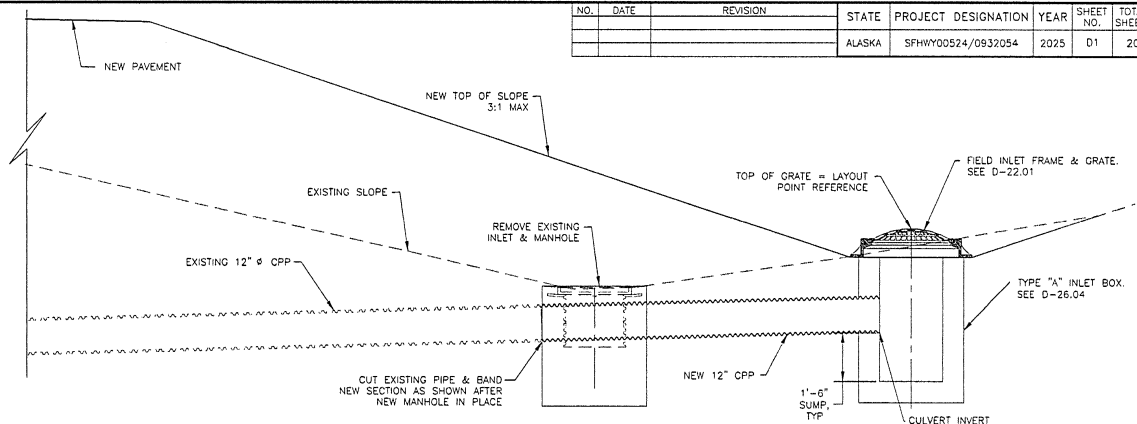
PER
REVIEW

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOST REGION, 6850 GLACIER HWY., JUNEAU, AK 99801 (907)465-1763
 03 June 2025 05:24 (Project) VMD24-01-01 Rev. 12/15/25 05:25pm

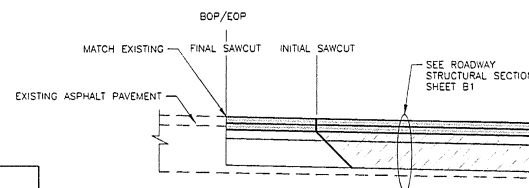
LAYOUT POINT TABLE				
POINT #	NORTHING	EASTING	ELEV.	DESCRIPTION
5001	2377881.5879	2626758.8083	-	BEGIN_TAPER
5002	2378127.1987	2626886.1919	-	END_TAPER
5003	2379164.7766	2625773.8415	-	EDGE_ASPH
5004	2379207.2343	2625750.4651	-	EDGE_ASPH
5005	2379216.7316	2625771.3472	-	EDGE_ASPH
5006	2379171.4894	2625708.9447	-	END_TAPER
5007	2379216.4836	2625741.8346	-	MEDIAN_R0.5
5008	2379222.7091	2626028.0870	-	MEDIAN_TAPER
5009	2379193.7351	2626369.6339	-	MEDIAN_R4.0
5010	2379291.2032	2625750.6816	-	CL_VNDIRBLT
5011	2380239.5370	2626991.8138	-	CL_VNDIRBLT
5012	2378404.7704	2626373.1440	-	BEGIN_TAPER
5013	2379288.5521	2625987.8604	-	MEDIAN_R0.5
5014	2379307.2036	2625761.6912	-	BEGIN_MEDIAN
5015	2379255.4026	2625719.8295	-	MEDIAN_R18
5016	2379508.9067	2626037.4237	-	END_EXIST_MEDIAN
5017	2378740.5185	2626099.0323	-	EDGE_ASPH
5018	2377891.4139	2626771.6786	-	DITCH_CL
5019	2378132.9377	2626593.6817	-	DITCH_CL
5020	2378408.2092	2626382.4404	-	DITCH_CL
5021	2378639.8982	2626206.7118	-	DITCH_CL
5022	2378871.1154	2626031.3613	-	DITCH_CL
5023	2379173.6973	2625801.8141	-	DITCH_CL
5024	2379195.6276	2625782.5774	-	DITCH_CL
5025	2378885.2041	2625810.8822	-	EDGE_ASPH
5026	2379139.6484	2625816.4381	-	EDGE_ASPH
5027	2379324.0198	2625974.3821	-	BEGIN_OFFSET
5028	2379314.5889	2625965.6332	-	END_MEDIAN
5029	2379578.3070	2625472.5919	-	BEGIN_TAPER
5030	2379226.1924	2625431.6542	-	END_TAPER
5031	2379698.0152	2625489.0575	-	BEGIN_TAPER
5032	2379184.7450	2625808.4800	-	TRAFFIC VAULT
5033	2379457.2815	2625973.7040	-	ADJUST_J_BOX
5034	2379485.5529	2625950.7600	-	ADJUST_J_BOX
5035	2379260.1436	2625975.9082	-	MEDIAN_R18

603.0021.0012 CORRUGATED POLYETHYLENE PIPE 12 INCH					
PIPE	FROM "O" STATION	TO "O" STATION	FROM OFFSET	TO OFFSET	LENGTH (FT.)
P-1	253+09	253+09	2.2 RT	8.9 RT	6.3
P-2	258+90	258+90	1.4 RT	10.9 RT	9.5

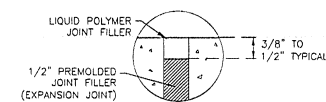
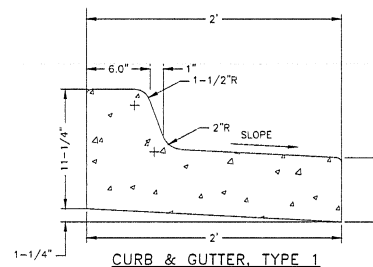
604.0005.0000 INLET, TYPE A			
STRUCTURE	"O" STATION	OFFSET	ELEVATION
S-1	253+09	8.9 RT	24.45
S-2	258+90	10.9 RT	25.82



DETAIL
FIELD INLET MODIFICATIONS
N.T.S.



BOP/EOP PAVEMENT TRANSITION DETAIL
N.T.S.

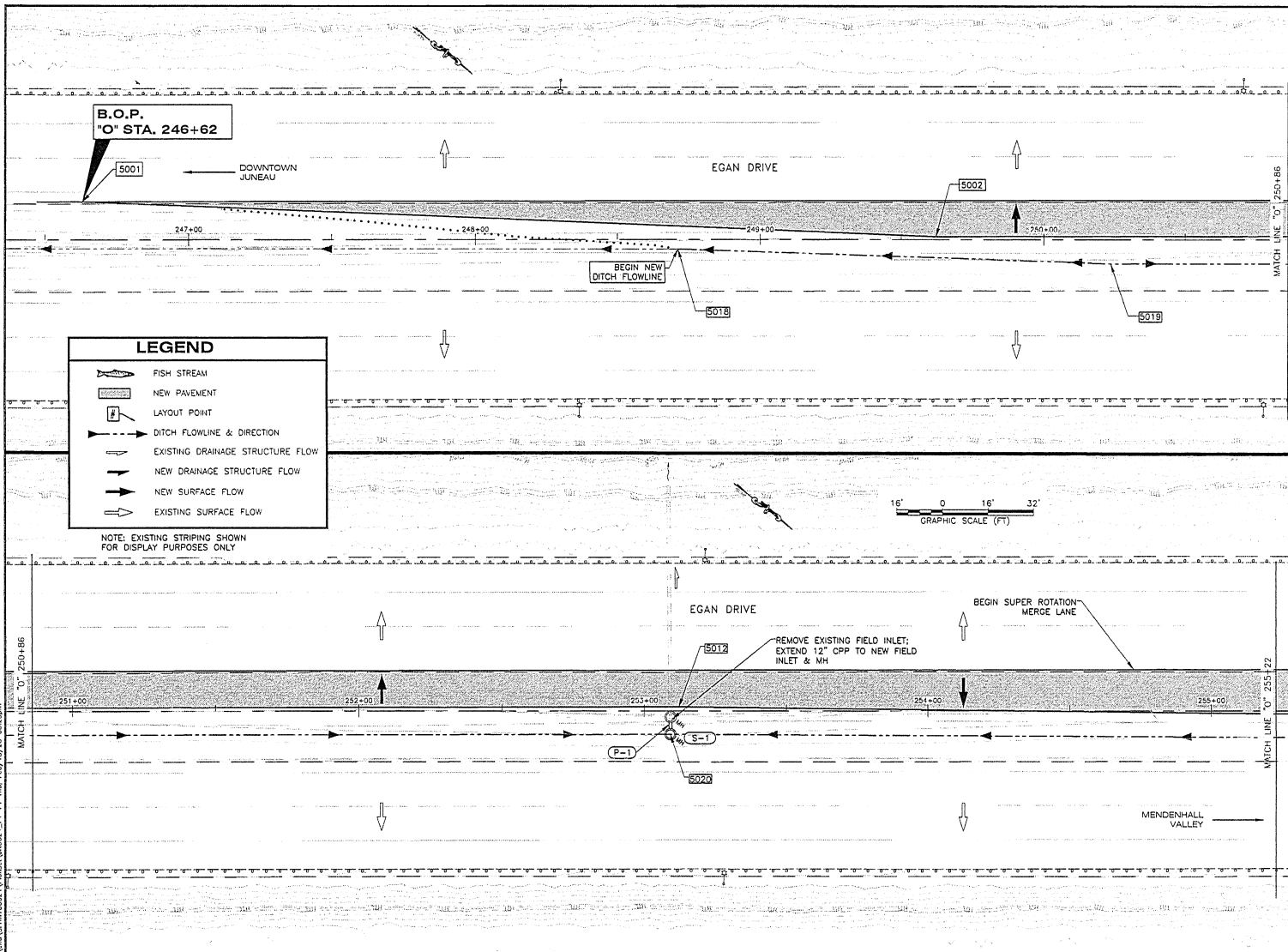


SECTION - EXPANSION JOINT

MISCELLANEOUS DETAILS
& SUMMARIES



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOST REGION, 6850 GLACIER HWY., JUNEAU, AK 99801 (907)465-1763
 CLIMATE STRATEGIC PLAN (JANUARY 2024) - F1 (Rev. 1/24/22) 02-230



RECORD OF REVISIONS		
No.	DATE	DESCRIPTION

PLAN LEGEND

CHECKED BY: STAFF

PER REVIEW

DESIGNED BY: TDF / JDO
 DRAWN BY: TDF / JDO

STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION
 & PUBLIC FACILITIES
 SOUTHCOST REGION

HSP JNU VANDERBILT
 CONTINUOUS GREEN T

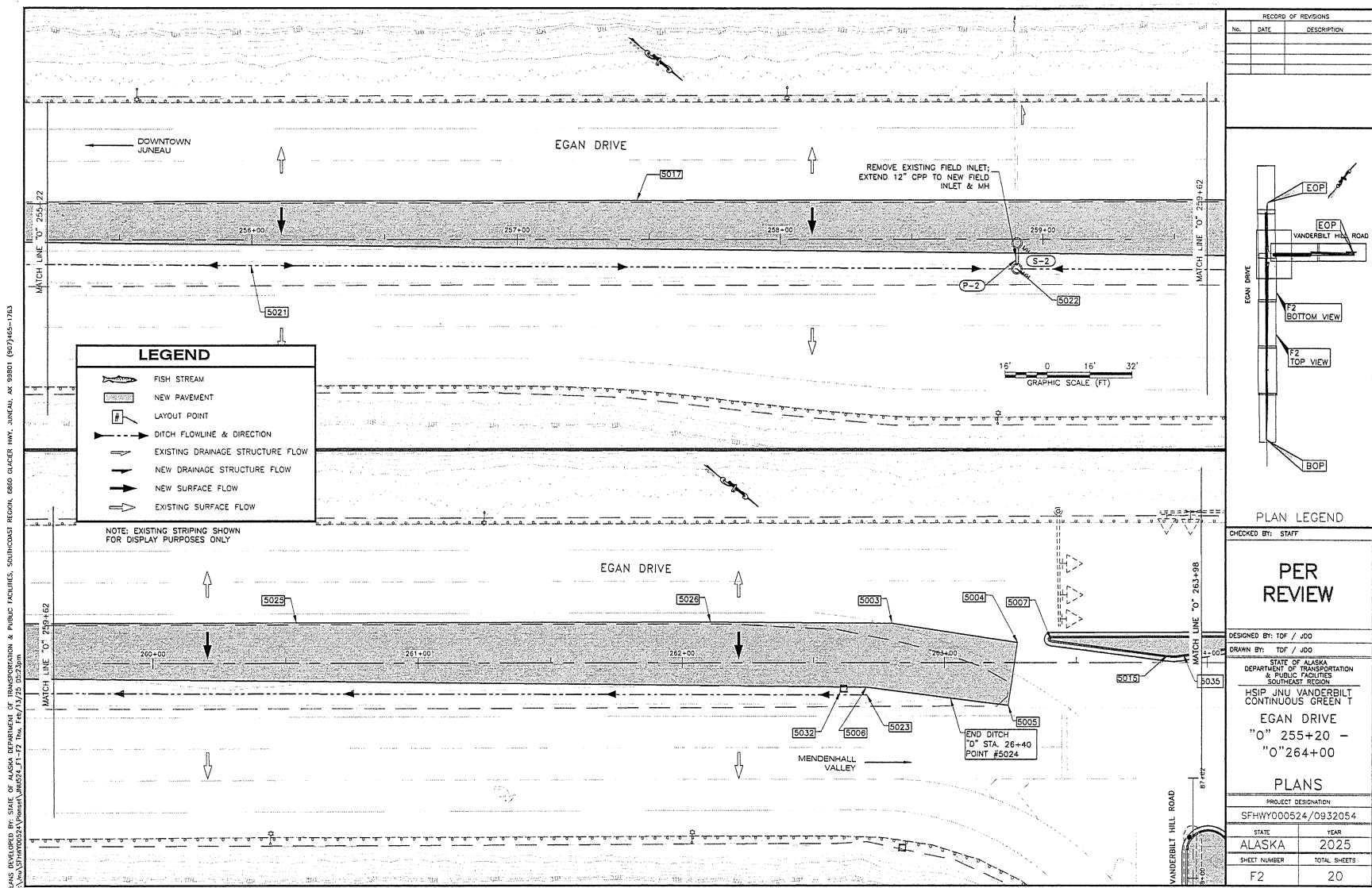
EGAN DRIVE
 BOP - "O" 255+20

PLANS

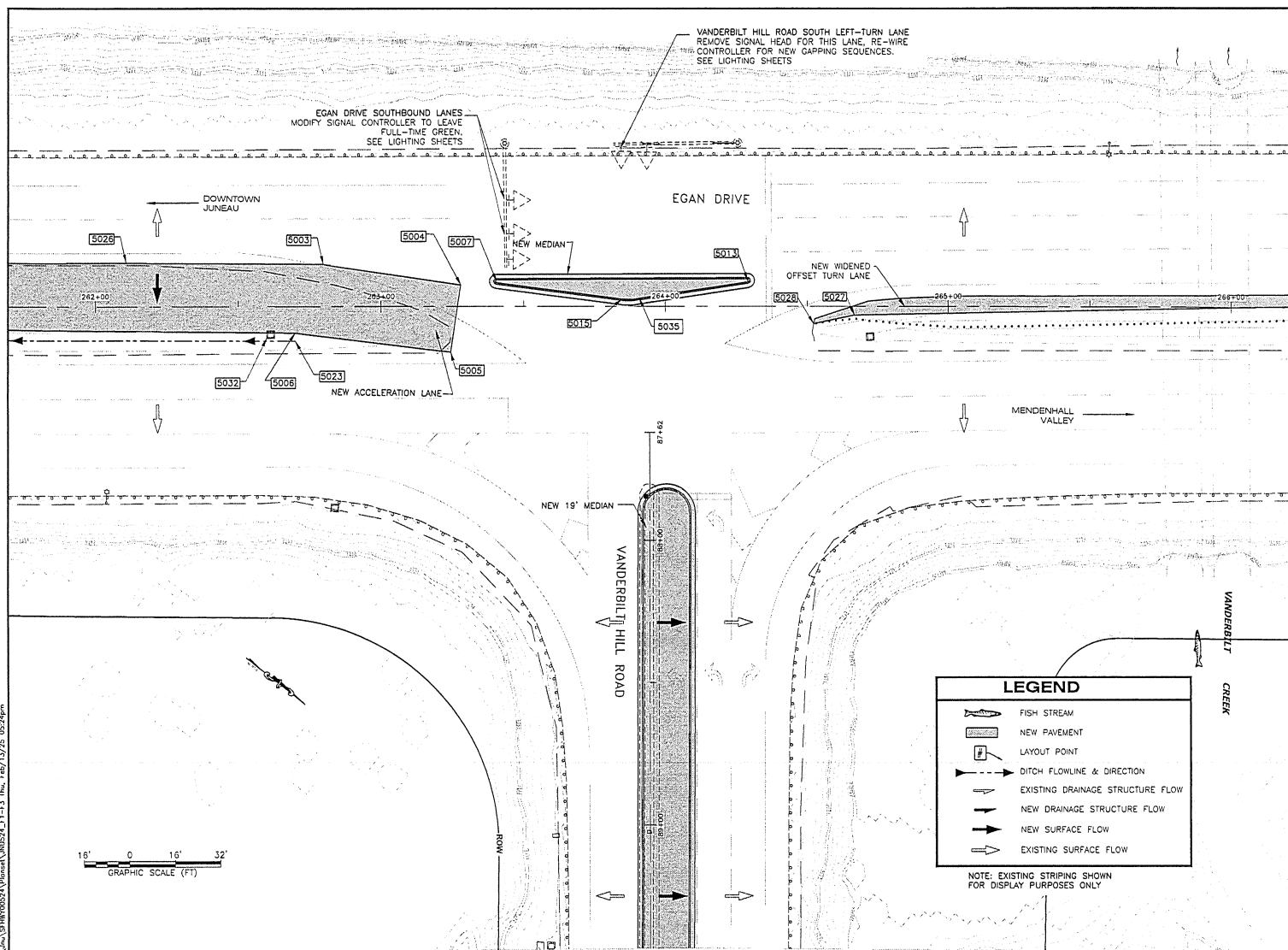
PROJECT DESIGNATION
 SFHWY000524/0932054

STATE	YEAR
ALASKA	2025

SHEET NUMBER	TOTAL SHEETS
F1	20



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHEAST REGION, 5889 GLACIER HWY., JUNEAU, AK 99801 (907)465-1763
 DESIGN APPROVED BY: JUDITH L. HARRIS, JUNEAU, AK 99801 (907)465-1763



RECORD OF REVISIONS		
No.	DATE	DESCRIPTION

PLAN LEGEND

CHECKED BY: STAFF

PER REVIEW

DESIGNED BY: TDF / JDO
 DRAWN BY: TDF / JDO

STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
 SOUTHEAST REGION
 HSIP JUNO VANDERBILT CONTINUOUS GREEN T

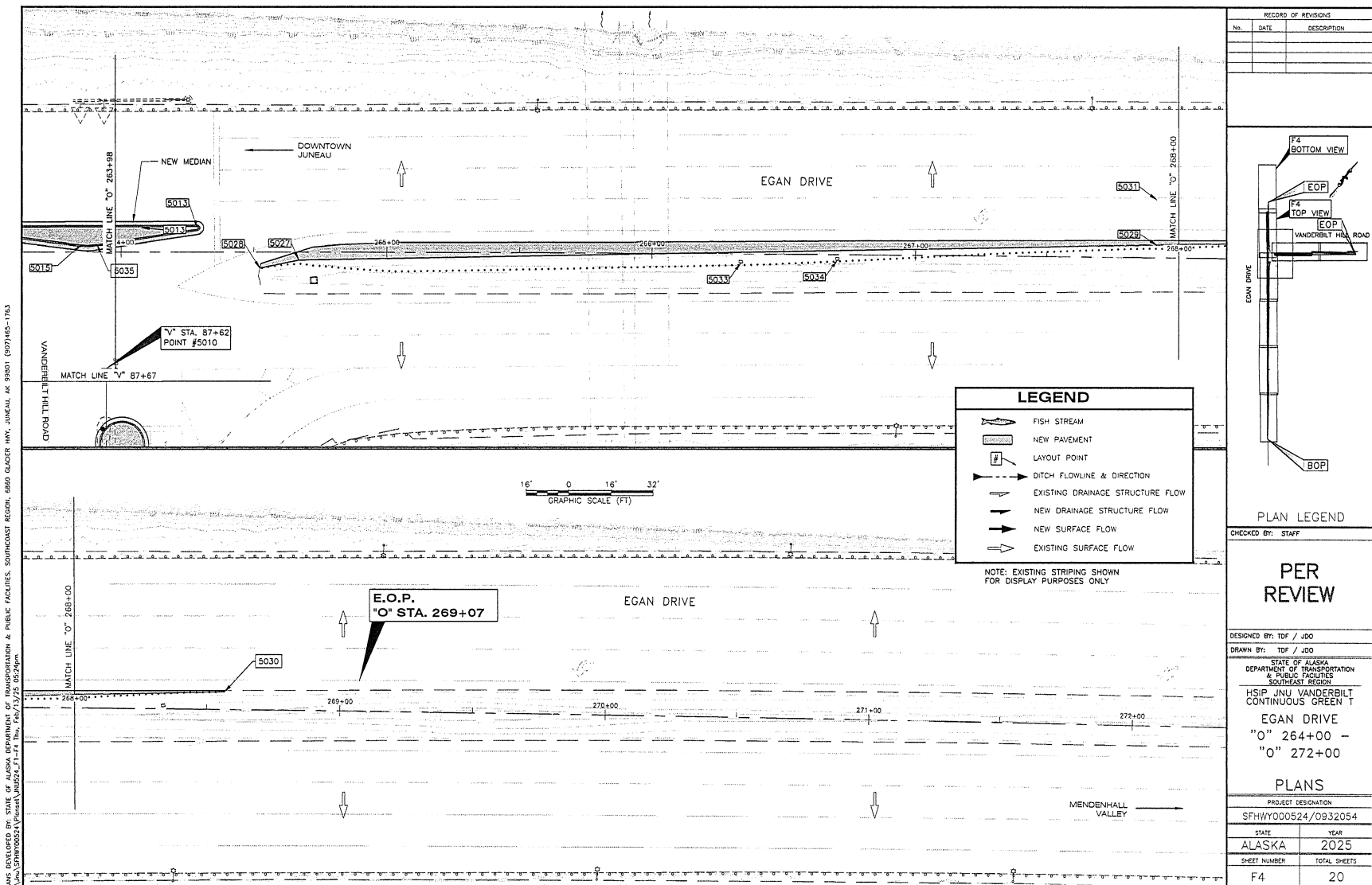
EGAN DRIVE - VANDERBILT HILL RD. INTERSECTION

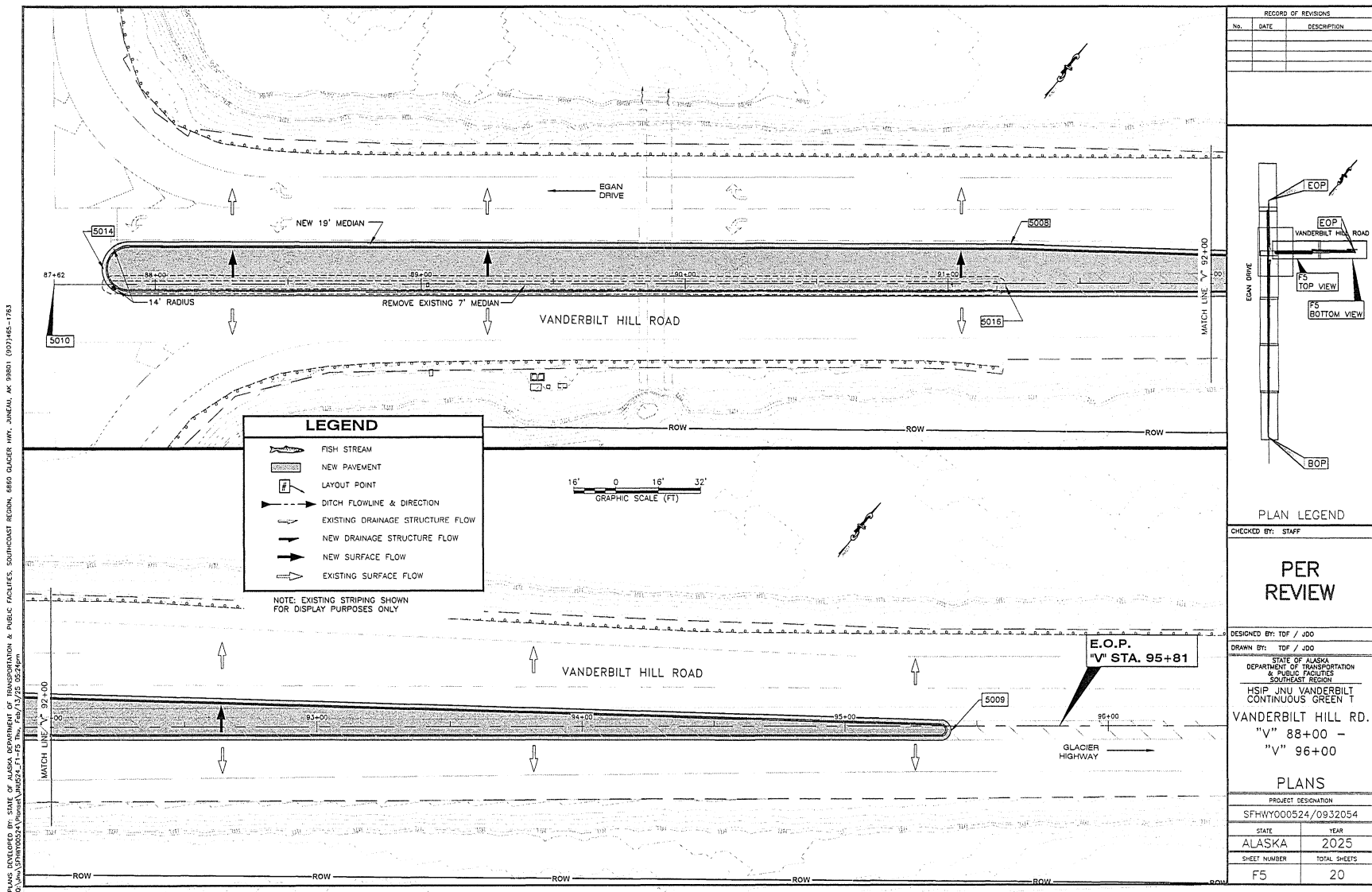
PLANS

PROJECT DESIGNATION
 SFHWY000524/0932054

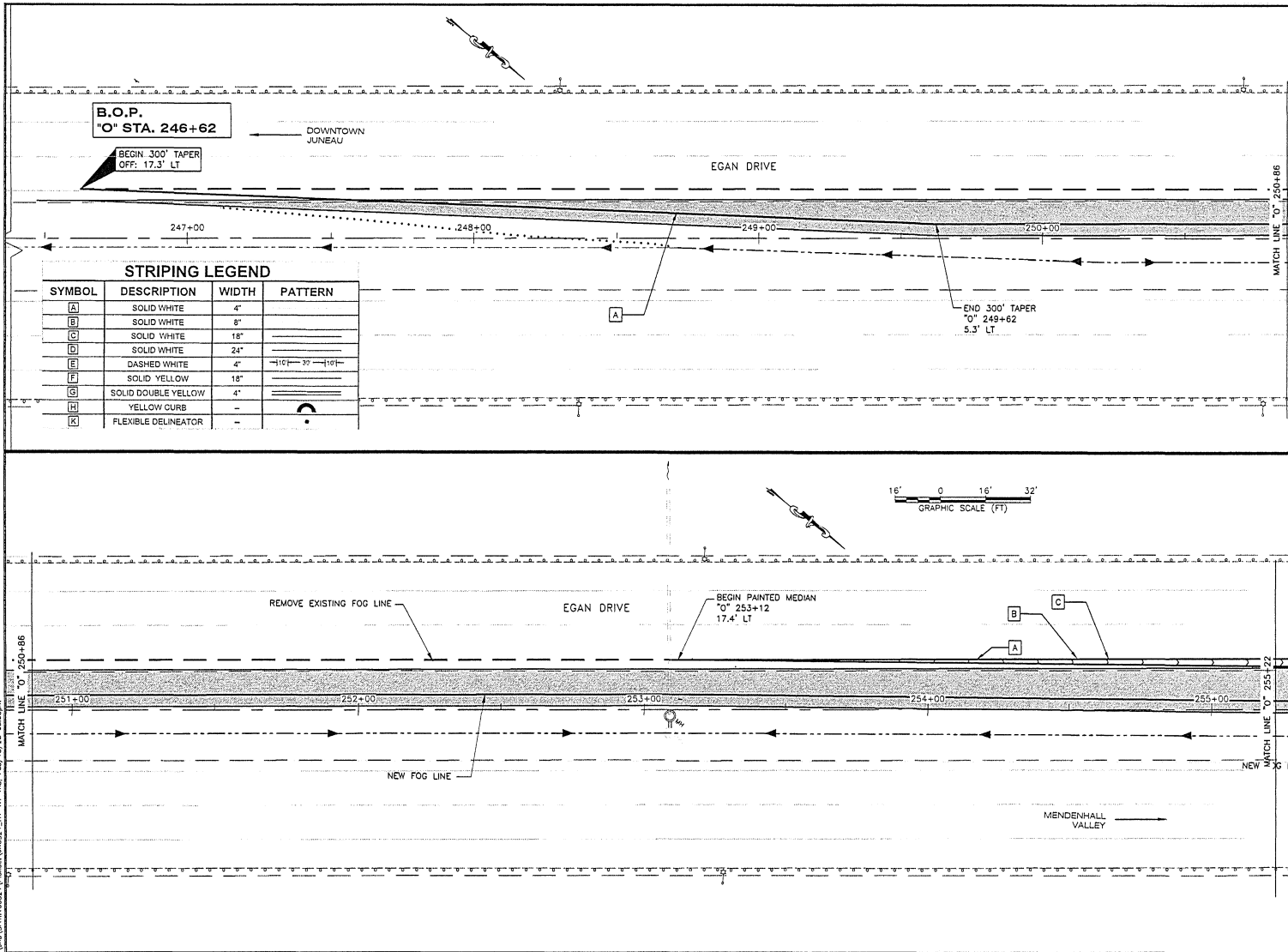
STATE	YEAR
ALASKA	2025

SHEET NUMBER	TOTAL SHEETS
F3	20

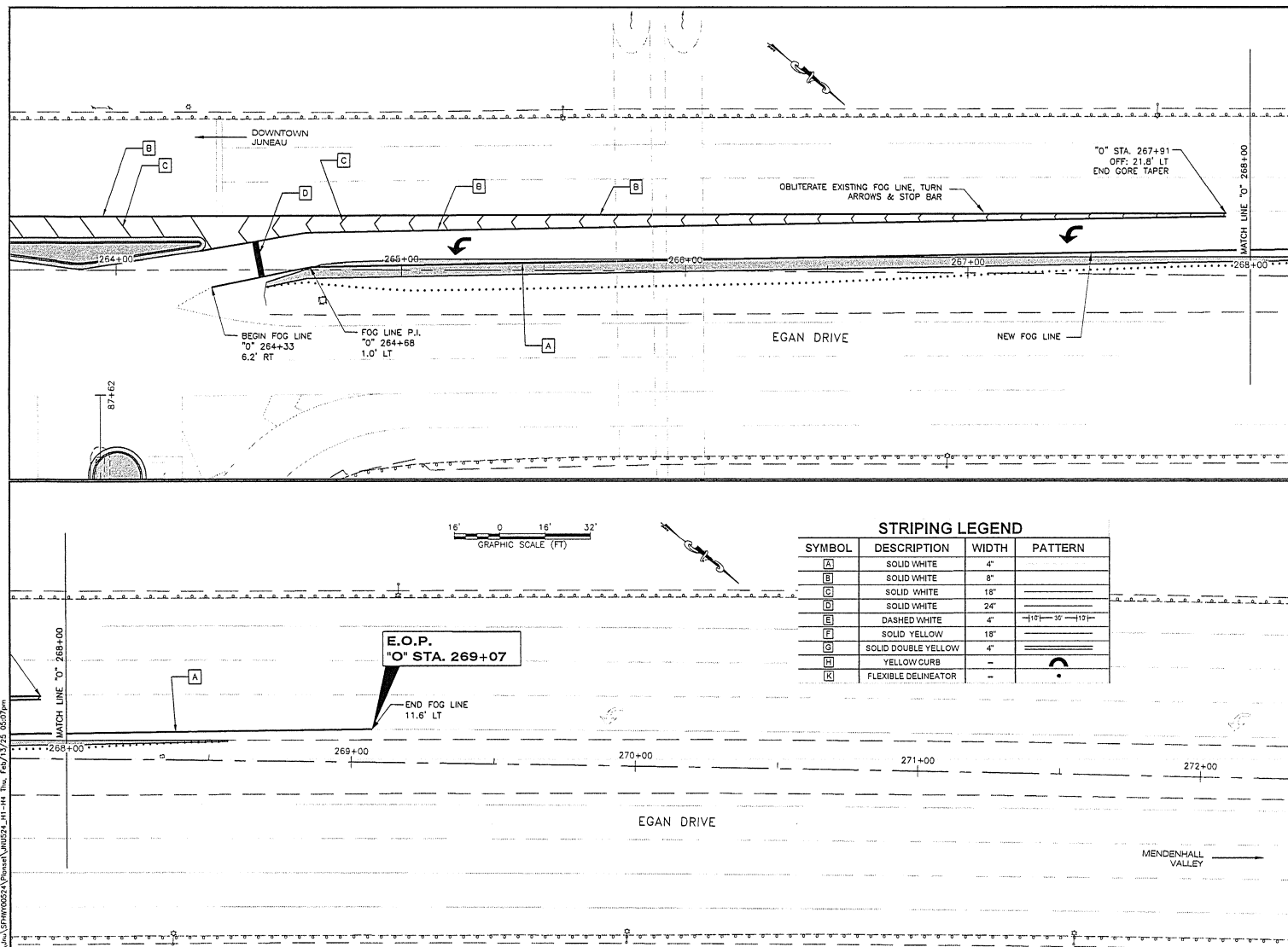




PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHEAST REGION, 6889 GLACIER HWY., JUNEAU, AK 99801 (907)465-1763
DRAWN BY: TDF / JDO



PLANS DEVELOPED BY: STATE OF ALASKA, DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHEAST REGION, 6850 GLACIER HWY., JUNEAU, AK 99801 (907)465-1763
 DESIGN: TDF / JDO
 DRAWN BY: TDF / JDO



STRIPING LEGEND			
SYMBOL	DESCRIPTION	WIDTH	PATTERN
[A]	SOLID WHITE	4"	
[B]	SOLID WHITE	8"	
[C]	SOLID WHITE	18"	
[D]	SOLID WHITE	24"	
[E]	DASHED WHITE	4"	- 10 -32- 12 -
[F]	SOLID YELLOW	18"	
[G]	SOLID DOUBLE YELLOW	4"	
[H]	YELLOW CURB	-	
[K]	FLEXIBLE DELINEATOR	-	

RECORD OF REVISIONS		
No.	DATE	DESCRIPTION

H4 BOTTOM VIEW	EOP
H4 TOP VIEW	EOP
VANDERBILT HILL ROAD	EOP
EGAN DRIVE	BOP

PLAN LEGEND

CHECKED BY: STAFF

PER REVIEW

DESIGNED BY: TDF / JDO
 DRAWN BY: TDF / JDO

STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
 SOUTHEAST REGION

HSR JUNO VANDERBILT
 CONTINUOUS GREEN T

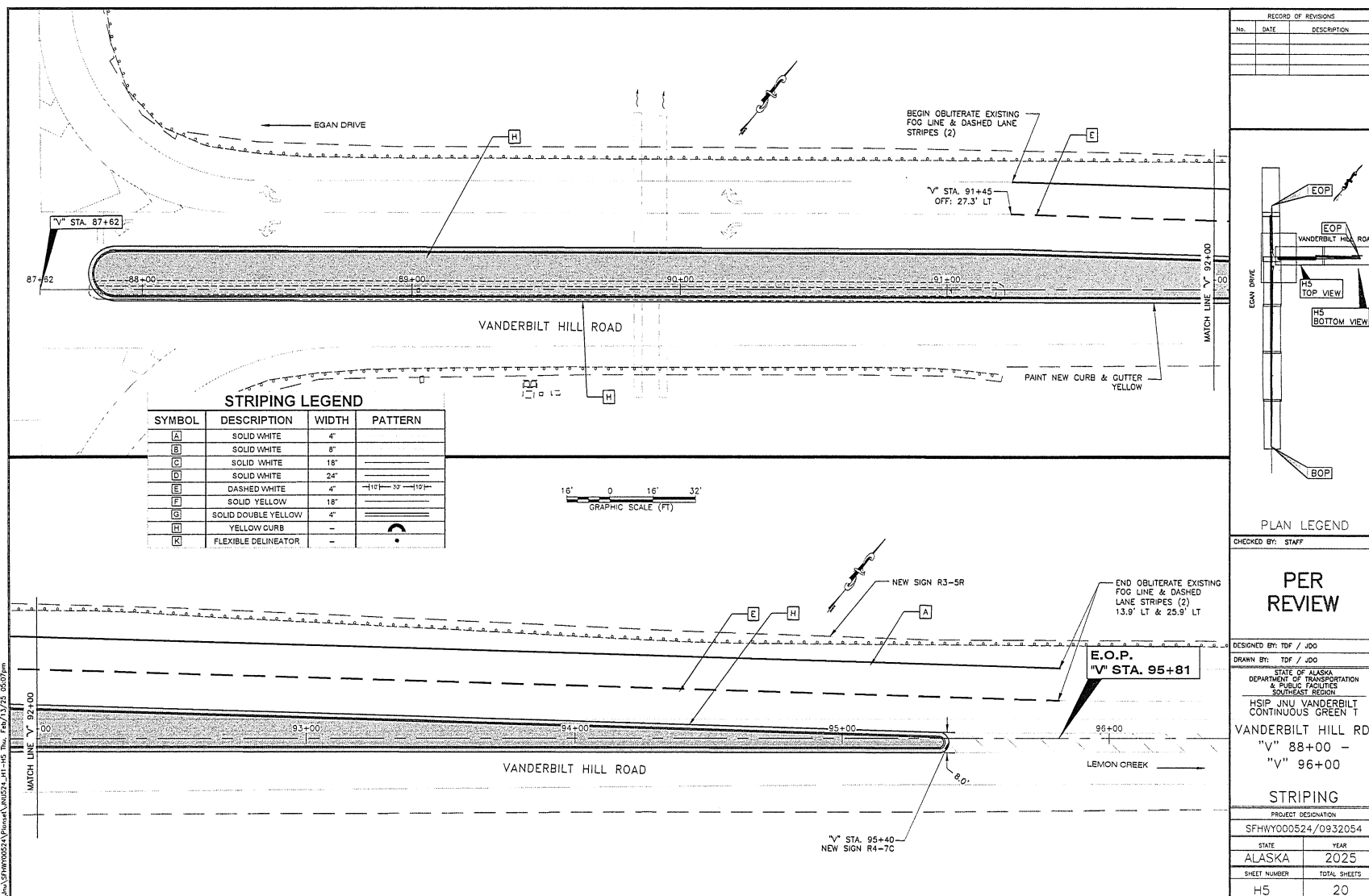
EGAN DRIVE
 "O" 264+00 -
 "O" 272+00

STRIPING

PROJECT DESIGNATION
 SFHWY000524/0932054

STATE	YEAR
ALASKA	2025
SHEET NUMBER	TOTAL SHEETS
H4	20

PLANS DEVELOPED BY: STATE OF ALASKA, DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHEAST REGION, 5550 QUAKER HWY., JUNEAU, AK 99801 (907)485-1753
 C:\pdm\submit\0524\0932\054\0932054.dwg 1/25/2025 10:03:39am



RECORD OF REVISIONS		
NO.	DATE	DESCRIPTION

PLAN LEGEND

CHECKED BY: STAFF

PER REVIEW

DESIGNED BY: TDF / JDO
 DRAWN BY: TDF / JDO

STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
 SOUTHEAST REGION

HSP JNU VANDERBILT CONTINUOUS GREEN T
 VANDERBILT HILL RD.
 "V" 88+00 -
 "V" 96+00

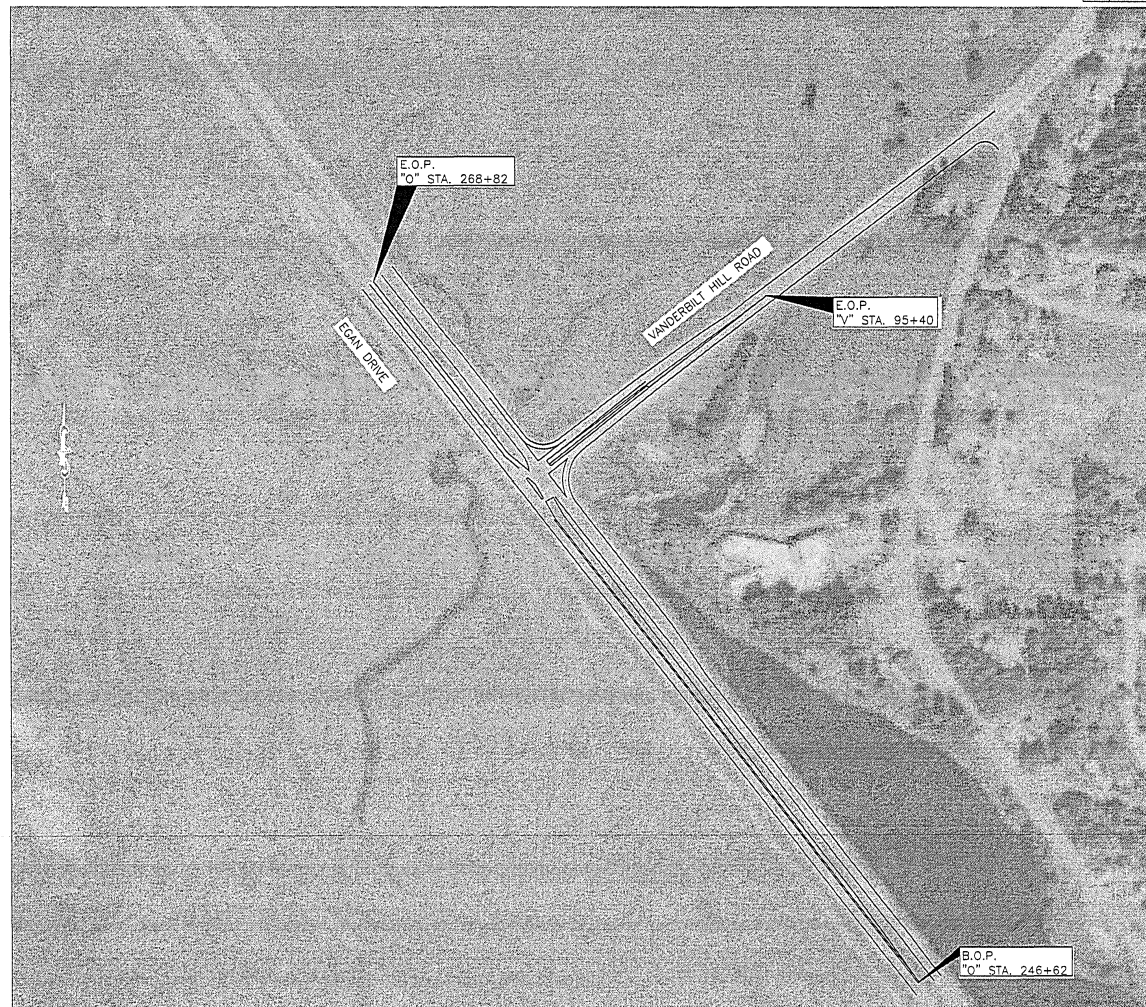
STRIPING

PROJECT DESIGNATION
 SFHWY000524/0932054

STATE	YEAR
ALASKA	2025
SHEET NUMBER	TOTAL SHEETS
H5	20

PLANS DEVELOPED BY: STATE OF ALASKA, DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOST REGION, 6880 GLACIER HWY., UNALASKA, AK 99501 (907)485-1763
PROJECT NUMBER: 2019-0000000-001 STA. 127+17.5 TO 246+82

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFH000524/0932054	2025	01	20



0 250 500
SCALE IN FEET

ESCP GENERAL NOTES

1. THIS IS A GENERAL EROSION AND SEDIMENT CONTROL PLAN (ESCP). THE CONTRACTOR IS EXPECTED TO PROVIDE ADDITIONAL DETAILS AND BMP'S BASED ON THE CONTRACTOR'S ACTUAL SCHEDULE AND CONSTRUCTION METHODS AND AS REQUIRED BY SECTION 658 OF THE PROJECT SPECIAL PROVISIONS.
2. INSTALL EROSION SEDIMENT CONTROL MEASURES PRIOR TO THE INITIATION OF CONSTRUCTION ACTIVITY.
3. THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ARE PART OF THE ESCP. ANY CHANGES TO THE ESCP REQUIRE APPROVAL OF THE ENGINEER. IT'S THE CONTRACTOR'S RESPONSIBILITY TO INSTALL AND MAINTAIN BMP'S AS SHOWN, OR AS CONTAINED IN ANY ESCP REVISIONS.
4. CONSTRUCTION ENTRANCE/EXIT MUST BE ESTABLISHED TO MINIMIZE OFF-SITE IMPACTS.
5. INSTALL PERIMETER CONTROL BMP WHEN WORKING WITHIN 25 FEET OF SURFACE WATERS AND ALONG WETLANDS WHERE A 25 FOOT VEGETATIVE BUFFER IS NOT RETAINED.
6. ONCE CONSTRUCTION IS COMPLETE ALL DISTURBED AREAS SHALL BE REVEGETATED OR STABILIZED PER SECTION 658.

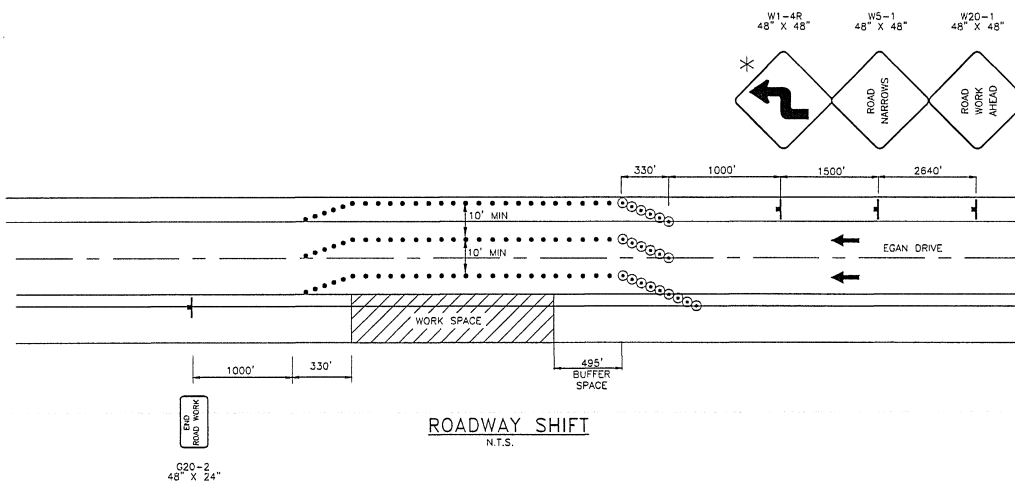
ESCP

ESCP NOT SEALED IN
ACCORDANCE WITH
ALASKA HIGHWAY
PRECONSTRUCTION
MATERIALS
REVIEW
NOVEMBER 15, 2013

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFWHW00524/0932054	2025	11	20

TCP SETUP TABLE											
SPEED (MPH)	MIN SHOULDER TAPER LENGTH (L) IN FEET			MIN MERGING TAPER LENGTH (L) IN FEET			MIN NUMBER OF DEVICES WIDTH OF			MAX DEVICE SPACING IN	
	4'	6'	8'	10'	11'	12'	10'	11'	12'	ALONG TAPER	ALONG TANGENT (FT)
45	50	90	120	150	195	340	11	12	13	45	360
55	75	110	150	250	305	360	11	12	13	55	495

LEGEND	
SIGN	
CONE	
DRUM	
ARROW BOARD	
TYPE III BARRICADE	
FLAGGER	
TRAFFIC FLOW DIRECTION	
WORK SPACE	



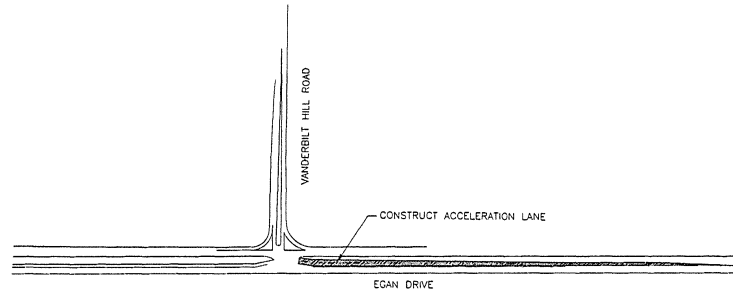
1. IT IS THE INTENT OF THIS TRAFFIC CONTROL PLAN (TCP) TO ILLUSTRATE SOME, NOT ALL, OF THE TRAFFIC CONTROL SETUPS WHICH WILL BE REQUIRED ON THIS PROJECT. ALL TCPs SHALL BE CREATED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PER SUB SECTION 643-1.03.
2. TEMPORARY DRIVING LANES SHALL HAVE A MINIMUM WIDTH OF 10'-0".
3. MAINTAIN A MINIMUM OF ONE LAKE TO BE OPEN FOR TRAFFIC AT ALL TIMES.
4. CONSTRUCTION SIGNS SHALL BE PLACED SUCH THAT THEY DO NOT OBSCURE EXISTING TRAFFIC SIGNS.
5. VERTICAL EDGES GREATER THAN 2" ARE NOT ALLOWED DURING NON-WORKING HOURS. LIMIT SHOULDER EXCAVATION TO AN AREA THAT CAN BE COMPLETELY BACKFILLED BY END OF WORK SHIFT.
6. CONSTRUCTION SIGNING SHALL BE IN PLACE ONLY WHEN THE CONDITIONS EXIST FOR WHICH THE SIGNS ARE INTENDED.
7. TRAFFIC CONTROL DEVICES, IF USED AT NIGHT, SHALL BE LIT IN ACCORDANCE WITH THE ALASKA TRAFFIC MANUAL.
8. ALL TEMPORARY TRAFFIC CONTROL DEVICES REMAINING IN-PLACE OVERNIGHT SHALL BE RETROREFLECTIVE AND/OR ILLUMINATED.
9. IF NIGHTTIME CLOSURES ARE NECESSARY, PLACE ONE PORTABLE CHANGEABLE MESSAGE BOARD SIGN AT EACH SIDE OF THE INTERSECTION EGAN DRIVE, AND ONE SIGN ON VANDERBILT HILL ROAD TO INFORM THE PUBLIC OF ROAD CLOSURE DATES AND TIMES. SEE SECTION 643 OF THE SPECIFICATIONS FOR ADDITIONAL DETAILS. PORTABLE CHANGEABLE MESSAGE BOARD SIGNS ARE NOT PART OF THE PERMANENT CONSTRUCTION SIGNS PLAN.
10. ALL TRAFFIC CONTROL PLANS SUBMITTED BY THE CONTRACTOR SHALL BE NUMBERED. ALL TRAFFIC CONTROL PLANS THAT USE A TYPICAL APPLICATION AS DESCRIBED IN THE MUTCD SHALL REFERENCE THE TYPICAL APPLICATION. EXAMPLE TCP3, MUTCD TA-10.

TRAFFIC CONTROL PLAN

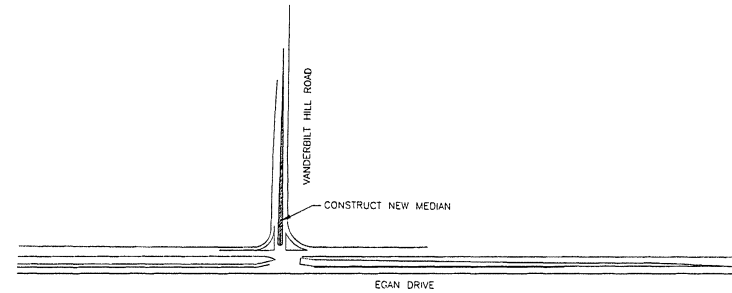
TCP NOT SEALED IN
 ACCORDANCE WITH
 ALASKA HIGHWAY
 PRESCRIPTION
 MUTCD
 2012

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, SOUTHCOST REGION, 8865 GLACIER HWY., JUNEAU, AK 99801 (907)465-1753
 DRAWING NO: SFHWY00524/0932054-11-12 Rev. 05/25/25 05/25/25

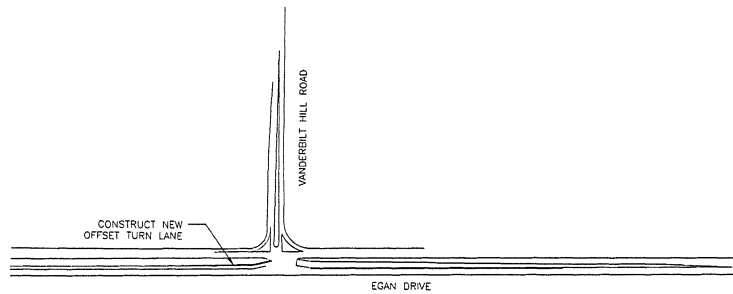
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	SFHWY00524/0932054	2025	T2	20



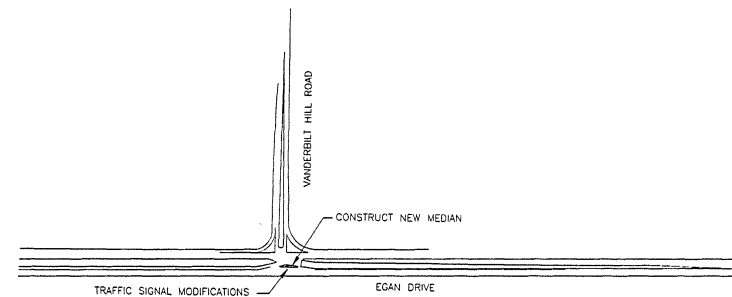
INTERSECTION PHASING PLAN 1



INTERSECTION PHASING PLAN 2



INTERSECTION PHASING PLAN 3



INTERSECTION PHASING PLAN 4

TRAFFIC CONTROL PLAN

TCP NOT SEALED IN
 ACCORDANCE WITH
 ALASKA HIGHWAY
 PRECONSTRUCTION
 MANUAL
PER REVIEW
 DATE: 05/25/25



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: Community Development

STAFF PERSON/TITLE: Brandon Robinson, Planner II

DATE: 06/29/25

APPLICANT: Joel Osburn, PE, Project Manager, Alaska DOT/PF

TYPE OF APPLICATION: Development Permit Application - City and State Project Review

PROJECT DESCRIPTION:
Conversion to a Continuous Green T (CGT) Intersection at Egan Drive and Vanderbilt Hill Road.

LEGAL DESCRIPTION: 58.345298, -134.500459

PARCEL NUMBER(S):

PHYSICAL ADDRESS: Milepoint 4.86 Egan Drive & Milepoint 3.48 Glacier Highway/Lemon Road

SPECIFIC QUESTIONS FROM PLANNER:

AGENCY COMMENTS:

CBJ Building Division has no issues with the project as described.

AGENCY COMMENTS (CONTINUED):



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: Community Development

STAFF PERSON/TITLE: Brandon Robinson, Planner II

DATE: 06/29/25

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PARCEL NUMBER(S):

PHYSICAL ADDRESS: Milepoint 4.86 Egan Drive & Milepoint 3.48 Glacier Highway/Lemon Road

SPECIFIC QUESTIONS FROM PLANNER:

AGENCY COMMENTS:

49.35.240(d)(1): Maximum. Grades on arterial streets must not exceed six percent; grades on other streets must not exceed 12 percent

Comment: I am not sure that the documents submitted contain the information to determine this. Also, would this apply over the length of the road? Is it sectional (as in measured over shorter intervals)? The grade is the steepness of the street. The section of road under consideration is nearly flat. No concerns.

49.35.240(d)(2): Minimum. The minimum grade for all streets is one-half percent

Comment: Same as above, I am not sure I have the information to determine this, nor knowledge of over what span it is measured.
No concerns.

AGENCY COMMENTS (CONTINUED):

49.35.240(d)(3): Cross slope. The minimum cross slope on all streets is three percent

Comment: It would appear that DOT has some notation for this (Application: Sheet B1, note left and right facing arrows with 2% marks over them on typical sections); however, that symbol is not described definitions sheet.

2% shown on the drawings. No concern.

49.35.240(e)(3): Grade. The grade for the approach leg of a new roadway at an intersection must not exceed two percent for the first 30 feet, measured from the edge of the existing roadway. The grade for the next 70 feet of the new roadway must not exceed six percent

Comment: Not sure this can be determined

Also, although it is intersection construction that is new, and somewhat substantial with drainage, median work, etc., it is not a new roadway, and so I am not sure this applies
No concern.

49.35.240(h) - Table:

Although this does not apply Egan, it would seem that the tables standards would apply to Vanderbilt Hill Rd.

I did have a question about whether the table standards for ADTs apply to developments that generate traffic, or the average carrying capacity of a roadway over the course of 24 hours (ADTs)

If applied via average traffic carrying, it would appear that sidewalks would need to be constructed on Vanderbilt Hill Rd during the intersection work. However this may be able to be waived by the Director or Commission based on the findings of the Department
Vanderbilt Hill road is a minor arterial. No concern.

After review of this application. GE has no concerns.



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www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: Community Development

STAFF PERSON/TITLE: Brandon Robinson, Planner II

DATE: 06/29/25

APPLICANT: Joel Osburn, PE, Project Manager, Alaska DOT/PF

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PARCEL NUMBER(S):

PHYSICAL ADDRESS: Milepoint 4.86 Egan Drive & Milepoint 3.48 Glacier Highway/Lemon Road

SPECIFIC QUESTIONS FROM PLANNER:

AGENCY COMMENTS:

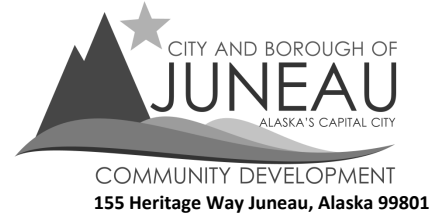
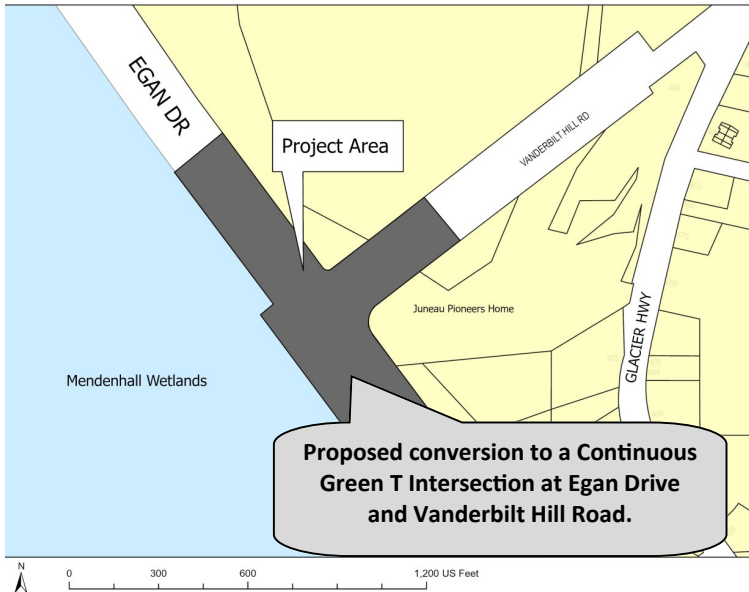
No concerns from Fire. Theresa Ross- CCFR Fire Marshal

AGENCY COMMENTS (CONTINUED):

Invitation to Comment

On a proposal to be heard by the CBJ Planning Commission

Your Community, Your Voice



TO

A State Project has been submitted for consideration and public hearing by the Planning Commission for **the conversion to a Continuous Green T Intersection at Egan Drive and Vanderbilt Hill Road**.

PROJECT INFORMATION:

Project Information can be found at:

<https://juneau.org/community-development/short-term-projects>

PLANNING COMMISSION DOCUMENTS:

Staff Report expected to be posted **July 14, 2025** at

<https://juneau.org/community-development/planning-commission>

Find hearing results, meeting minutes, and more here, as well.

Now through July 7

Comments received during this period will be sent to the Planner, **Brandon Robinson**, to be included as an attachment in the staff report.

July 8— noon, July 18

Comments received during this period will be sent to Commissioners to read in preparation for the hearing.

HEARING DATE & TIME: 7:00 pm, July 22, 2025

This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting <https://juneau.zoom.us/j/85421744892> and use the Webinar ID: 854 2174 4892 OR join by telephone, calling: 1-253-215-8782 and enter the Webinar ID (above).

You may also participate in person in City Hall Assembly Chambers, 155 Heritage Way Juneau, Alaska.

July 26

The results of the hearing will be posted online.

FOR DETAILS OR QUESTIONS,

Phone: (907)586-0753 ext. 4139

Email: pc_comments@juneau.gov or Brandon.Robinson@juneau.gov

Mail: Community Development, 155 Heritage Way, Juneau AK 99801

Case No.: CSP2025 0001

Parcel No.: None

CBJ Parcel Viewer: <http://epv.juneau.org>

Printed June 10, 2025



Outlook

From Brandon Robinson <Brandon.Robinson@juneau.gov>

Date Thu 6/19/2025 2:19 PM

To joel.osburn@alaska.gov <joel.osburn@alaska.gov>

C Irene Gallion <Irene.Gallion@juneau.gov>

Hi Joel,

Hope this email finds you well—

Related to the City review of the State's Intersection Project's public hearing:

The project's public-notice sign is available to pick up in our permit center. In accordance with public-notice provisions (two-week notice), it must be posted by July 8th, must be visible from the public right-of-way, and we must receive a picture of its posting from you or an agent of yours, ideally, by close of business day on July 7th, as we will need to attach the photo to our documents for the hearing.

Very best regards,
Brandon

Brandon Robinson | Planner II

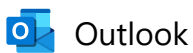
[Community Development Department](#) | City & Borough of Juneau, Alaska

Physical Location: 230 S. Franklin Street, 4th Floor, Marine View Building

Office: (907) 586-0753; Extension 4139 F



Attachment G – Public Notice Sign Photo



Outlook

CSP2025 0001

From guthrieiii.charlesm@acsalaska.net <guthrieiii.charlesm@acsalaska.net>

Date Thu 6/12/2025 11:03 AM

To Brandon Robinson <Brandon.Robinson@juneau.gov>

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Hi Brandon, the flyer sent out has a real dearth of information about this project. What will it look like and what is the reasoning behind other then some folks don't get how to merge when turning right on to Egan drive. The website doesn't say much.

Thanks
Chuck Guthrie



From Don and Pat Ingledue <doningle@alaska.net>

Date: Tue 6/17/2025 8:46 PM

to: Brandon Robinson <Brandon.Robinson@juneau.gov>

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Brandon, thanks for sending the info on what a CGT intersection is. I looked at the Virginia video on Youtube and it was very helpful.

I am happy with the existing traffic lights at this intersection. I travel through it quite often, since I live close by, and have never had or seen any problems or accidents since it was created.

As my wife and I have been licensed drivers for over 60 years, it is our experience that merging into traffic on the passenger side of the vehicle is difficult. Fisheye mirrors that try to help with the blind spot make the traffic seem farther away than they actually are. Physically turning your head to look over your right shoulder has more matter in the way to obscure your vision than your left shoulder when merging on that side. I would be very happy to have the south bound traffic controlled by a light as it is now!

As far as the argument about improving commuting time for the south bound traffic, most traffic can now get through on a single cycle of the light. I don't think time gained for them is significant.

There must be more serious problems in the state than this intersection that need attention.

Thanks for giving me the opportunity to comment,

Don and Pat Ingledue
4815 Glacier Hwy



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/CDD
155 S. Seward Street • Juneau, AK 99801

DATE: July 11, 2025

TO: Mandy Cole, Chair, Planning Commission

BY: Forrest Courtney, Senior Planner
Community Development Department

THROUGH: Jill Lawhorne, AICP, Director
Community Development Department

Case Number: FZE2025 0001

RE: Correction regarding CBJ 49.70.410

The staff memo for this case referred to an outdated version of CBJ 49.70.410. Citations for the “board of adjustment” should be corrected to the “planning commission”. In a number of instances, a change in tense from “shall” to “must” or “are” is needed to reflect the updated code.

The specific changes for the memo are listed below.

CORRECTIONS:

PLANNING COMMISSION ROLE (Pages 1-3)

Reference:

(a) The planning commission shall hear all applications for an exemption from the provisions of this article, and are limited to the powers granted in this article and those necessarily implied to ensure due process and to implement the policies of this article.

Correction:

- “The board of adjustment*”, corrected to “The planning commission”
- “Shall be limited to the powers”, corrected to “are limited to the powers”

Reference:

(b) In passing upon such application, the planning commission must consider all technical evaluations, relevant factors, standards specified in other sections of this article, and:

Correction:

- *“the board of adjustment shall consider all technical evaluations, all relevant factors,”* corrected to *“the planning commission must consider all technical evaluations, relevant factors,”*

Reference:

(b)(1) The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

Correction:

- *“Comprehensive Plan”* corrected to *“comprehensive plan”*

Reference:

(d) Upon consideration of the factors of subsection (b) of this section and the purposes of this article, the commission may deny or grant the application and may attach such conditions to the grant of an exception as it deems necessary to further the purposes of this article

Correction:

- *“the board may”* corrected to *“the commission may”*

Reference:

(f) Exceptions must not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

Correction:

- *“Exceptions shall”* corrected to *“Exceptions must”*

Reference:

(g) Exceptions must only be issued upon a determination that the exception is the minimum necessary, considering the flood hazard, to afford relief.

Correction:

- *“Exceptions shall”* corrected to *“Exceptions must”*

Correction:

- Strike *“Ordinance Serial No. 2021-19 established the Planning Commission as the Board of Adjustment.”*

FINDINGS (Page 4)

Reference:

(h) Exceptions must only be issued upon;

Correction:

- *“Exceptions shall”* corrected to *“Exceptions must”*



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/CDD
155 S. Seward Street • Juneau, AK 99801

DATE: July 8, 2025

TO: Mandy Cole, Chair, Planning Commission

BY: Forrest Courtney, Senior Planner
Community Development Department

A handwritten signature in black ink, likely belonging to Forrest Courtney, the Senior Planner mentioned in the 'BY' field.

THROUGH: Jill Lawhorne, AICP, Director
Community Development Department

FILE NO.: FZE2025 0001

PROPOSAL: CBJ Engineering is applying for a Flood Zone Exception to allow an encroachment and development of the HESCO Barrier, Phase 1 project.

This memo provides details on the Flood Zone Exception process and includes standards specified in CBJ 49.70, Article IV, attachments that provide technical evaluations, and relevant factors, for the Planning Commission's consideration.

These materials can be found on the CDD website at: <https://juneau.org/community-development/short-term-projects>

PLANNING COMMISSION ROLE

Pursuant to CBJ 49.70.410(b)(c)(d)(e)(f) and (g), a Flood Zone Exception may be granted to provide an applicant relief from the requirements of this Title 49, the Land Use Code.

Per CBJ 49.70.410(b)(c)(d)(e)(f) and (g), a Flood Zone Exception may be granted to provide an applicant relief from requirements of this title after the prescribed hearing and after the Planning Commission has made a determination in accordance with the following requirements:

49.70.410 Exceptions.

(a)The board of adjustment shall hear all applications for an exception from the provisions of this article, and shall be limited to the powers granted in this article and those necessarily implied to ensure due process and to implement the policies of this article.*

(b) In passing upon such application, the board of adjustment shall consider all technical evaluations, all relevant factors, standards specified in other sections of this article, and:

- (1) The danger that materials may be swept onto other lands and cause injury to other persons or property;*
- (2) The danger to life and property due to flooding or erosion damage;*
- (3) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;*
- (4) The importance of the services provided by the proposed facility to the community;*
- (5) The necessity to the facility of a waterfront location, where applicable;*
- (6) The availability of alternative locations for the proposed use, which are not subject to flooding or erosion damage;*
- (7) The compatibility of the proposed use with existing and anticipated development;*
- (8) The relationship of the proposed use to the Comprehensive Plan and floodplain management program for that area;*
- (9) The safety of access to the property in times of flood for ordinary and emergency vehicles;*
- (10) The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; and*
- (11) The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.*

(c) Exceptions may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing subsections (b)(1)—(b)(11) of this section have been fully considered. As the lot size increases beyond the one-half acre, the technical justification required for issuing the exception increases.

(d) Upon consideration of the factors of subsection (b) of this section and the purposes of this article, the board may deny or grant the application and may attach such conditions to the grant of an exception as it deems necessary to further the purposes of this article.

(e) Exceptions may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the state inventory of historic places, without regard to the procedures set forth in the remainder of this section.

(f) Exceptions shall not be issued within any designated floodway if any increase in flood levels during the base flood discharge would result.

(g) Exceptions shall only be issued upon a determination that the exception is the minimum necessary, considering the flood hazard, to afford relief.

*Ordinance Serial No. 2021-19 established the Planning Commission as the Board of Adjustment.

EXCEPTION REQUEST

CBJ Engineering has applied for an exception to:

(1) [CBJ 49.70.400(e)(3)(E)] – Description of the plan for maintenance of the altered portion of the watercourse so that the flood-carrying capacity is not diminished.

(2) [CBJ 49.70.400(f)(4)] – Control filling, grading, dredging, and other development that may increase flood damage.

(3) [CBJ 49.70.400(f)(5)] – Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters or that may increase flood hazards in other areas.

(4) [CBJ 49.70.400(g)(1)(A)] – Design, modify, and anchor new construction and substantial improvements to prevent flotation, collapse, or lateral movement of the structure(s).

(5) [CBJ 49.70.400(g)(5)] – Floodplain development permit requirements.

(6) [CBJ 49.70.400(i)(2)] – Encroachments, including fill, new construction, and other development, except subdivisions, within a floodway are prohibited unless an engineer licensed in the State of Alaska submits a hydrologic and hydraulic analyses to the director indicating that the encroachment would not result in any increase in flood levels during the occurrence of the base flood discharge. The hydrologic and hydraulic analyses must be performed in accordance with standard engineering practice acceptable by the Federal Emergency Management Agency.

AGENCY REVIEW

CDD conducted an agency review comment period between July 1, 2025, and July 18, 2025. Agency review comments can be found in **Attachment B**.

Agency	Summary
Alaska Department of Natural Resources – Division of Mining, Land and Water	No comment.
CBJ Building	No comment.
CBJ General Engineering	No response received at the writing of this staff memo.
Juneau Police Department	No response received at the writing of this staff memo.
Alaska Department of Fish and Game	No response received at the writing of this staff memo.
Alaska Department of Transportation and Public Facilities	No response received at the writing of this staff memo.
Alaska Division of Community and Regional Affairs	No response received at the writing of this staff memo.
Southeast Alaska Watershed Coalition	No response received at the writing of this staff memo.
Forest Service (Tongass National Forest) - U.S. Department of Agriculture	No response received at the writing of this staff memo.
U.S. Army Corps of Engineers – Alaska District	No response received at the writing of this staff memo.
U.S. Coast Guard	No response received at the writing of this staff memo.

PUBLIC COMMENTS

In accordance with 49.20.230(b) public notice was mailed to property owners within 500 feet of the subject area (**Attachment C**), two public notice signs were posted at locations approved by the director two weeks prior to the hearing (**Attachment D**). Ads were placed in the Juneau Empire. No public comments had been received at the time of writing this staff memo.

FINDINGS

(h) Exceptions shall only be issued upon:

- (1) A showing of good and sufficient cause;*
- (2) A determination that failure to grant the exception would result in exceptional hardship to the applicant; and*
- (3) A determination that the granting of an exception will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances or conflict with existing local laws or ordinances.*

RECOMMENDATION

The Director recommends that the Planning Commission review and consider the request for an exception from the provisions of CBJ 49.70, Article IV – Flood Hazard Areas. If the Exception is granted, the applicant shall submit an appropriate Letter of Map Change [44 CFR 72.2] request to FEMA within six months of project completion, noted as May 10, 2025 [44 CFR 65.3].

ATTACHMENTS

Item	Description
Attachment A1	Application – Forms
Attachment A2	Application – Narrative
Attachment A3	Application – HESCO Barrier Phase 1 Project No-Rise Analysis
Attachment A4	Application – HESCO FLOODLINE 4836 UNIT Technical Specifications
Attachment A5	Application – HESCO Basic Construction Guidelines
Attachment A6	Application – HESCO Maintenance and Repair
Attachment A7	Application – U.S. Army Corps of Engineers – POA-2025-0089
Attachment A8	Application – Alaska Department of Natural Resources – ADL 109422
Attachment A9	Application – Alaska Department of Fish and Game – FH25-I-0020
Attachment A10	Application – Alaska Department of Fish and Game – FH25-I-0021
Attachment A11	Application – Alaska Department of Fish and Game – FH25-I-0022
Attachment A12	Application – Alaska Department of Fish and Game – FH25-I-0023
Attachment A13	Application – Alaska Department of Fish and Game – FH25-I-0024
Attachment A14	Application – Alaska Department of Fish and Game – FH25-I-0025
Attachment A15	Application – Alaska Department of Fish and Game – FH25-I-0026
Attachment A16	Application – Alaska Department of Fish and Game – FH25-I-0027
Attachment A17	Application – Alaska Department of Fish and Game – FH25-I-0028
Attachment A18	Application – Alaska Department of Fish and Game – FH25-I-0029
Attachment B	Agency Comments
Attachment C	Abutters Notice
Attachment D	Public Notice Signs



DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

To be completed by Applicant	PROPERTY LOCATION		
	Physical Address 9399 Rivercourt Way to 4395 Riverside Drive		
	Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) See Parcel Listing attachment		
	Parcel Number(s) See Parcel Listing attachment		
	☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____		
	LANDOWNER/ LESSEE		
	Property Owner	Varies (see Parcel Listing attachment)	
	Contact Person	Nathan Rumsey	
	Mailing Address	155 Heritage Way, Juneau, AK 99801	Phone Number(s) 907-586-0800 x4182
	E-mail Address	nate.rumsey@juneau.gov	
LANDOWNER/ LESSEE CONSENT			
Required for Planning Permits, not needed on Building/ Engineering Permits. Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.			
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows: A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission. B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.			
Local Improvement District _____ Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)			
X _____ Landowner/Lessee (Signature) Date			
_____ Landowner/Lessee (Printed Name) Title (e.g.: Landowner, Lessee)			
X _____ Landowner/Lessee (Signature) Date			
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.			
APPLICANT			
If same as LANDOWNER, write "SAME"			
Applicant (Printed Name)	City and Borough of Juneau		
Contact Person	Nathan Rumsey		
Mailing Address	155 Heritage Way, Juneau, AK 99801	Phone Number(s) 907-586-0800 x4182	
E-mail Address	nate.rumsey@juneau.gov		
X	<i>Nate Rumsey</i> Applicant's Signature	6/26/2025 Date of Application	

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Intake Initials FHC	
Case Number FZE25-001	Date Received 25/6/26

Owner	Parcel #	Street Address	Legal Description	Mailing Address Line 1	City	State	Zip
John & Sharon Taber; Judith Taber O'Kelley	5B2101190160	9399 Rivercourt Way	LAKEWOOD I BL A LT 16	9399 Rivercourt Way	Juneau	AK	99801
Scott W Heaton; Traci S Heaton	5B2101200010	9391 Rivercourt Way	LAKEWOOD I BL B LT 1	9391 Rivercourt Way	Juneau	AK	99801
William F Race; Sara M Race	5B2101200100	3339 Meander Way	LAKEWOOD I BL B LT 10	3339 Meander Way	Juneau	AK	99801
Alan & Joann Steininger	5B2101200110	3343 Meander Way	LAKEWOOD I BL B LT 11	3343 Meander Way	Juneau	AK	99801
Lisa Bryant	5B2101200120	3361 Meander Way	LAKEWOOD I BL B LT 12	3361 Meander Way	Juneau	AK	99801
Robert Atadero; Adrienne Atadero	5B2101200130	3377 Meander Way	LAKEWOOD I BL B LT 13	3377 Meander Way	Juneau	AK	99801
Constance Stager	5B2101200150	3401 Meander Way	LAKEWOOD I BL B LT 15	3401 Meander Way	Juneau	AK	99801
Joshua Hamilton; Andrea Hamilton	5B2101200160	3425 Meander Way	LAKEWOOD I BL B LT 16	3425 Meander Way	Juneau	AK	99801
Benjamin Miller	5B2101200030	3311 Meander Way	LAKEWOOD I BL B LT 3	3867 Killewich Dr	Juneau	AK	99801
Dee Pearson; Robert Pearson	5B2101200080	3331 Meander Way; 3333 Meander Way	LAKEWOOD I BL B LT 8	3333 Meander Way	Juneau	AK	99801
Bjorn Karl & Stefanie Wolter	5B2101200090	3335 Meander Way	LAKEWOOD I BL B LT 9	3335 Meander Way	Juneau	AK	99801
Dennis Mathers; Kimberly Mathers	5B2101210010	3429 Meander Way	LAKEWOOD II BL B LT 17A	3429 Meander Way	Juneau	AK	99801
Nicolaas Wilhelmus Bus; Susan Miller Bus	5B2101210020	3433 Meander Way	LAKEWOOD II BL B LT 18A	3433 Meander Way	Juneau	AK	99801
Mark Bunes; Rhonda Bunes	5B2101210030	3437 Meander Way	LAKEWOOD II BL B LT 19	3437 Meander Way	Juneau	AK	99801
Jordan Ashley McNatt; Chase Robert McNatt	5B2101210040	3441 Meander Way	LAKEWOOD III BL B LT 20	3441 Meander Way	Juneau	AK	99801
Norman E Staton; Donna M Staton	5B2101210050	3445 Meander Way	LAKEWOOD III BL B LT 21	3445 Meander Way	Juneau	AK	99801
Howard R Jaeger; Roberta J Jaeger	5B2101210060	3451 Meander Way	LAKEWOOD III BL B LT 22	3451 Meander Way	Juneau	AK	99801
Jessica Wright; Andre Khmelev	5B2101210070	3455 Meander Way	LAKEWOOD III BL B LT 23	3455 Meander Way	Juneau	AK	99801
Jeffrey M Rud; Lori L Rud	5B2101210080	3459 Meander Way	LAKEWOOD III BL B LT 24	3459 Meander Way	Juneau	AK	99801
Kamat Lindoff; Danielle Lindoff	5B2101210100	3467 Meander Way	LAKEWOOD III BL B LT 26	3467 Meander Way	Juneau	AK	99801
Melissa Brown; Locke O Brown	5B2101210110	3471 Meander Way	LAKEWOOD III BL B LT 27	3471 Meander Way	Juneau	AK	99801
Samuel E Hatch	5B2101210120	3475 Meander Way	LAKEWOOD III BL B LT 28	3475 Meander Way	Juneau	AK	99801
Sean Smack; Ashley Smack	5B2101210130	3479 Meander Way	LAKEWOOD III BL B LT 29	3479 Meander Way	Juneau	AK	99801
Jeffrey Garmon; Nicole Garmon	5B2101210140	3483 Meander Way	LAKEWOOD III BL B LT 30	3483 Meander Way	Juneau	AK	99801
Kevin Tillotson; Gabriella Tillotson	5B2101210180	3499 Meander Way	LAKEWOOD III BL B LT 34	3499 Meander Way	Juneau	AK	99801
Scott J Griffith; Sarah L Griffith	5B2101220010	3503 Meander Way	LAKEWOOD III BL C LT 1	3503 Meander Way	Juneau	AK	99801
Elizabeth Barr Cayce	5B2601000030	9419 Long Run Dr	LENGTHY ACRES BL 3 LT E TR W	9419 Long Run Dr.	Juneau	AK	99801
Bonnie Chaney; Gregory Chaney	5B2601000042	9418 Long Run Dr.	LENGTHY ACRES BL 4 LT A2	715 Sixth Street	Juneau	AK	99801
Jeffry L Lind; Ann M Lind	5B2501460014	4299 Marion Dr	LINDS OASIS LT 2	4299 Marion Dr	Juneau	AK	99801
John Bishop; Anita Bishop	5B2501450010	4229 Marion Dr	QUAYS EDGE LT 1	4229 Marion Dr	Juneau	AK	99801
Joan A Brown	5B2501450100	4265 Marion Dr	QUAYS EDGE LT 10	4265 Marion Dr	Juneau	AK	99801
Jacob Olmstead; Cailey Neary	5B2501450110	4269 Marion Dr	QUAYS EDGE LT 11	4269 Marion Dr	Juneau	AK	99801
George Carpenter; Darlene Carpenter	5B2501450120	4273 Marion Dr	QUAYS EDGE LT 12	4273 Marion Dr	Juneau	AK	99801
Gary Leder; Juli Leder	5B2501450020	4233 Marion Dr	QUAYS EDGE LT 2	4233 Marion Dr	Juneau	AK	99801
David Athearn; Cynthia Athearn	5B2501450030	4237 Marion Dr	QUAYS EDGE LT 3	4237 Marion Dr	Juneau	AK	99801
William J Palmer	5B2501450060	4249 Marion Dr	QUAYS EDGE LT 6	4249 Marion Dr	Juneau	AK	99801
Peter Bangs; Cara Rodgveller	5B2501450080	4257 Marion Dr	QUAYS EDGE LT 8	4257 Marion Dr	Juneau	AK	99801
David & Colleen Mckenna	5B2501450090	4261 Marion Dr	QUAYS EDGE LT 9	4261 Marion Dr	Juneau	AK	99801
Darrin Crapo; Lindsay Crapo	5B2601010020	9347 Betty Ct	SMITH PARK IV BL 6 LT 5	9347 Betty Ct	Juneau	AK	99801
William Diebels Jr & Audrey Diebels	5B2601010030	9342 Betty Ct	SMITH PARK IV BL 6 LT 6	9342 Betty Ct	Juneau	AK	99801
Lawrence J Sullivan	5B2501100051	9336 Betty Ct	SMITH PARK IV BL 6 LT 8A	9336 Betty Ct	Juneau	AK	99801
Anselm Staack; Carol Staack	5B2501100060	9330 Betty Ct	SMITH PARK IV BL 6 LT 9	9330 Betty Ct	Juneau	AK	99801
Drew and Michelle Norman	5B2501160040	3819 Killewich Dr	SMITH PARK IV BL 7 LT 4A1	3819 Killewich Dr	Juneau	AK	99801
James L Wright	5B2501160050	3823 Killewich Dr	SMITH PARK IV BL 7 LT 4B1	3823 Killewich Dr	Juneau	AK	99801
Charity Lynn Platt	5B2501160061	3827 Killewich Dr	SMITH PARK IV BL 7 LT 5A1	3827 Killewich Dr	Juneau	AK	99801
Christopher Gianotti; Joan Gianotti	5B2501160071	3831 Killewich Dr	SMITH PARK IV BL 7 LT 6A1	3831 Killewich Dr	Juneau	AK	99801

Laureen Dicarlo; Paul Dicarlo	5B2501430050	3871 Killewich Dr	SMITH PARK VI BL A LT 10	3871 Killewich Dr	Juneau	AK	99801
Brian Nielsen; Kaiti Nielsen	5B2501430040	3875 Killewich Dr	SMITH PARK VI BL A LT 11	3875 Killewich Dr	Juneau	AK	99801
Donna M Schultz	5B2501430030	3879 Killewich Dr	SMITH PARK VI BL A LT 12	3879 Killewich Dr	Juneau	AK	99801
Jane R Huckstorf; David L Cline	5B2501430020	3883 Killewich Dr	SMITH PARK VI BL A LT 13	3883 Killewich Dr	Juneau	AK	99801
Scott Gende; Amy Reifenstein	5B2501430120	3843 Killewich Dr	SMITH PARK VI BL A LT 3	3843 Killewich Dr	Juneau	AK	99801
Michael Tibbles; Kristy Tibbles	5B2501430100	3851 Killewich Dr	SMITH PARK VI BL A LT 5	3851 Killewich Dr	Juneau	AK	99801
Gretchen Pence; William Pence	5B2501430080	3859 Killewich Dr	SMITH PARK VI BL A LT 7	3859 Killewich Dr	Juneau	AK	99801
Eric S Holst; Sandra K Holst	5B2501430070	3863 Killewich Dr	SMITH PARK VI BL A LT 8	3863 Killewich Dr	Juneau	AK	99801
Christie Bentz	5B2501430060	3867 Killewich Dr; 3867 Killewich Dr Unit B	SMITH PARK VI BL A LT 9	3867 Killewich Dr	Juneau	AK	99801
Stephen Ball; Heather Ball	5B2501100071	3785 Killewich Dr	SMITH PARK VII LT 1	3785 Killewich Dr	Juneau	AK	99801
Mark Ryder; Amanda Ryder	5B2501100093	3807 Killewich Dr	SMITH PARK VII LT 3	3807 Killewich Dr	Juneau	AK	99801
Rodney A Wilson	5B2501440030	4211 Riverside Dr; 4215 Riverside Dr	TIM LT 1	4215 Riverside Dr	Juneau	AK	99801
Brian Dallas; Sara Dallas	5B2501440020	4101 Riverside Dr; 4103 Riverside Dr	TIM LT 2	4101 Riverside Dr	Juneau	AK	99801
Gregory & Anita Thomas	5B2501460012	4293 Marion Dr	VAN VLEITS LANDING LT 1	4293 Marion Dr	Juneau	AK	99801
John & Suzanne Schoenmann	5B2101210160	3491 Meander Way	LAKEWOOD III BL B LT 32	PO Box 20222	Juneau	AK	99802
Morgan Cruz Erisman; Vladimir Cruz	5B2101200140	3379 Meander Way	LAKEWOOD I BL B LT 14	PO Box 35351	Juneau	AK	99803
Timothy K Smith; Carrie E Smith	5B2501160032	3815 Killewich Dr	SMITH PARK IV BL 7 LT 3A1	PO Box 33924	Juneau	AK	99803
Jonathan K Gunstrom; Brooke S Gunstrom	5B2501430130	3839 Killewich Dr	SMITH PARK VI BL A LT 2	PO Box 34221	Juneau	AK	99803
Frank F Mesdag; Mimi D Mesdag	5B2501430110	3847 Killewich Dr; 3849 Killewich Dr	SMITH PARK VI BL A LT 4	PO Box 32497	Juneau	AK	99803
Richard N Janelle; Kim M Janelle	5B2501430090	3855 Killewich Dr	SMITH PARK VI BL A LT 6	PO Box 34562	Juneau	AK	99803
Stephen M Bower; Patricia J Bower	5B2601000043	9416 Long Run Dr	LENGTHY ACRES BL 4 LT A1A	PO Box 210525	Auke Bay	AK	99821
Killehuck LLC	5B2501160021	3811 Killewich Dr	SMITH PARK IV BL 7 LT 2A	108 Huckleberry Cir	Ketchikan	AK	99901
Daniel C Wayne; Kathleen A Wayne	5B2501100080	3795 Killewich Dr	SMITH PARK IV BL 6 LT 11	3795 Killewich Dr	Juneau	AK	99801-8817
Garrett & Florentina Schoenberger	5B2101200070	3327 Meander Way	LAKEWOOD I BL B LT 7	3327 Meander Way	Juneau	AK	99801-9602
John H Cooper; Alyson H Cooper	5B2101210170	3495 Meander Way	LAKEWOOD III BL B LT 33	3495 Meander Way	Juneau	AK	99801-9626
John G Schoenmann	5B2101210150	3487 Meander Way	LAKEWOOD III BL B LT 31	PO Box 020222	Juneau	AK	99802-0222
Russell and Thyes Shaub Living Trust	5B2101210090	3463 Meander Way	LAKEWOOD III BL B LT 25	PO Box 32517	Juneau	AK	99803-2517
Donald R Nowlin	5B2501450040	4241 Marion Dr	QUAYS EDGE LT 4	PO Box 33614	Juneau	AK	99803-3614
Carefree LLC	5B2501450050	4245 Marion Dr	QUAYS EDGE LT 5	PO Box 33614	Juneau	AK	99803-3614
Mike J Erickson; Bonnie Erickson	5B2501430140	3835 Killewich Dr	SMITH PARK VI BL A LT 1	PO Box 34363	Juneau	AK	99803-4363
James Stedman & Lori Steadman	5B2501450070	4253 Marion Dr	QUAYS EDGE LT 7	PO Box 34421	Juneau	AK	99803-4421
Brian J Goettler; Kimberly D Goettler	5B2101200060	3323 Meander Way	3323 Meander Way	3323 Meander Way	Juneau	AK	99801
Harvey E Hergett; Pamela K Hergett	5B2101200050	3319 Meander Way	3319 Meander Way	3319 Meander Way	Juneau	AK	99801-9602
Christine R Shaw; Adam J Shaw	5B2101200040	3315 Meander Way	11422 Olympia Dr	11422 Olympia Dr	Houston	TX	77077
Loretta Bessie Neal	5B2101200020	9387 Rivercourt Way	PO Box 032537	PO Box 32537	Juneau	AK	99803



FLOOD ZONE EXCEPTION APPLICATION

See reverse side for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

PROJECT SUMMARY

The project includes installation of HESCO flood barriers and associated bank revetment to protect the Mendenhall Valley from future, likely GLOF flooding. This project covers the east bank of the Mendenhall River from 9399 Rivercourt Way upstream to 4395 Riverside Drive.

Base Flood Elevation Varies

Flood Insurance Rate Map Panel # Multiple

Elevation of Lowest Floor of all Structures Including Basement N/A

Elevation to which the Structure has been Floodproofed N/A

ALL REQUIRED MATERIALS ATTACHED

To be completed by Applicant

☒ Complete application per CBJ 49.70.410

☒ Narrative including:

- ☐ Exceptional hardship if not granted
- ☐ Elevation at lowest floor
- ☐ Elevation structure(s) have been floodproofed
- ☐ Certification that floodproofing meets generally accepted standards
- ☒ Extent to which any watercourse will be altered or relocated
- ☐ Plan for maintenance of altered or relocated watercourse
- ☐ If the base flood elevation will change as a result of the proposed activity, and why
- ☒ Why a flood zone exception is needed
- ☒ How the proposed exception will effect life and property in the event of a flood

☐ How susceptible the proposed facility is to flooding

☒ How the proposed facility/use serves the public

☒ If the facility/use requires a waterfront location

☐ Availability of alternative locations

☐ Compatibility of proposed use with surrounding existing and proposed uses

☐ Relationship of proposed use to the Comprehensive Plan and Flood Management programs

☐ Expected heights, velocity, duration, rate of rise, and sediment transport

☒ Other applicable information as outlined in CBJ 49.70.410(b)

☒ Plans (details on page 2)

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

FLOOD ZONE EXCEPTION FEES	Fees	Check No.	Receipt	Date
Application Fees	\$ <u>400.00</u>			
Admin. of Guarantee	\$ _____			
Adjustment	\$ _____			
Total Fee	\$ _____			

This form and all documents associated with it are public record once submitted.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Case Number	Date Received
<u>FZE25-001</u>	<u>25/6/26</u>

Flood Zone Exception Application Instructions

Flood zone exceptions are outlined in CBJ 49.70.410

Each application for a Flood Zone Exception is reviewed by the Board of Adjustment at a public hearing. The permit procedure is intended to provide the Board the flexibility necessary to make decisions tailored to individual applications. The Board may stipulate conditions to mitigate external adverse impacts from the proposed use. If it is determined that these impacts cannot be satisfactorily overcome, the permit shall be denied.

Pre-Application Conference: Prior to submitting this application the applicant will meet with City & Borough of Juneau staff to discuss the proposed development, the permit procedure and to determine the application fees. To schedule a pre-application conference, please contact the Permit Center at 586-0770 or via e-mail at Permits@juneau.org.

Application: An application for a Flood Zone Exception will not be accepted by the Community Development Department until it is determined to be complete. The items needed for a complete application are:

1. **Forms:** Completed Flood Zone Exception and Development Permit Application forms.
2. **Fees:** The fee is \$400.00. Any development, work or use done without a permit issued will be subject to double fees. All fees are subject to change.
3. **Project Narrative:** A detailed narrative describing the project according to the criteria under CBJ 49.70.410 Exceptions.
4. **Plans:**
 - A. Site plan showing the dimensions of the parcel, existing and proposed structures, mean lower low water line, topographical contours shown at 2 foot intervals, and elevation drawings illustrating the land and structures.
 - B. Floorplan.
 - C. Profile views.
 - D. If applicable:
 - A. Certification that the floodproofing methods for any nonresidential structure meet generally accepted floodproofing standards.
 - B. Description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.
 - C. Description of the plan for maintenance of the altered or relocated portion of the watercourse so that the flood-carrying capacity is not diminished.

Document Format: All materials submitted as part of an application shall be submitted in either of the following formats:

1. Electronic copies in the following formats: .doc, .txt, .xls, .bmp, .pdf, .jpg, .gif, .xlm, .rtf (other formats may be preapproved by the Community Development Department).
2. Paper copies 11" X 17" or smaller (larger paper size may be preapproved by the Community Development Department).

Application Review & Hearing Procedure: Once the application is determined to be complete, the Community Development Department (CDD) will initiate the review and scheduling of the application. This process includes:

Review: As part of the review process the Community Development Department will evaluate the application for consistency with all applicable City & Borough of Juneau codes and adopted plans. Depending on unique characteristics of the permit request, the application may be required to be reviewed by other municipal boards and committees. During this review period, the Community Development Department may also send the application out for a 15-day agency review period. Review comments may require the applicant to provide additional information, clarification, or submit modifications/alterations for the proposed project.

Hearing: All Flood Zone Exceptions must be reviewed by the Board of Adjustment. Once an application has been deemed complete and has been reviewed by all applicable parties the Community Development Department will schedule the application for the next appropriate meeting.

Public Notice Responsibilities: Flood Zone Exception requests shall be given proper public notice, which consists of the following:

Community Development Department: Will give notice of the pending Planning Commission meeting and its agenda in the local newspaper a minimum of 10-days prior to the meeting. Furthermore, the department will mail abutters notices to all property owners within 500-feet of the project site.

FROM THE FLOOD ZONE; IT MAY SEVERELY LIMIT OR PREVENT THE ABILITY TO RECEIVE FEDERALLY-BACKED FLOOD INSURANCE; AND, IF REQUIRED, FLOOD INSURANCE MAY INCREASE WITH THE APPROVAL OF THE REQUEST.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED



City and Borough of Juneau
Engineering & Public Works Department
155 Heritage Way
Juneau, Alaska 99801
Telephone: 586-0800

TO: Jill Lawhorne, CBJ CDD Director
DATE: June 30, 2025
FROM: Nate Rumsey, CBJ EPW Deputy Director 
THRU: Denise Koch, CBJ EPW Director
RE: HESCO Barrier Phase 1 Flood Zone Exception Application

The purpose of this letter is to provide narrative information related to documentation and rationale supporting a Flood Zone Exception Application for the City and Borough of Juneau's (CBJ) HESCO Barrier, Phase 1 project.

The sole purpose of the HESCO Barrier Phase 1 project is to reduce community flood risk associated with possible future Suicide Basin glacial lake outburst flood (GLOF) events. It was conceived, developed, and directed to provide near-term, non-permanent flood protection for properties along the Mendenhall River impacted by the 2024 GLOF. Due to timing constraints, not all properties could be protected prior to a likely 2025 GLOF. Hence, CBJ elected to sequence the work, with Phase 1 covering the east bank of the Mendenhall River from 4395 Riverside Drive (northern reach) to 9399 Rivercourt Way (southern reach). This area was selected because it offered protection to the greatest number of properties relative to the length of barrier that could be installed in one construction season.

The project included targeted riverbank revetment stabilization at specific locations within the mapped floodway, and the installation of a 2-mile HESCO flood barrier, generally placed above the riverbank and upland of existing revetments. Additional details about the revetment and barrier installation can be found in the attached *HESCO No-Rise Analysis* document dated June 23, 2025.

There are several factors that set this work apart from traditional development. As mentioned above, the sole purpose of this project is to reduce CBJ community flood risk associated with possible future GLOF events. Through professional engineering analysis, including hydraulic and hydrologic modeling performed for CBJ by Michael Baker, International (MBI), the HESCO Barrier Phase 1 project significantly reduces the likely

impacts to public and private properties from a GLOF similar in size (or even slightly larger) than what was seen in 2024. Additionally, modeling shows that these improvements create no discernable rise to the base flood elevation, and no additional flood risk to properties outside the protected area.

Secondly, the materials and products used for the project were specifically selected to prevent or withstand the movement of water, and specifically recommended by the U.S. Army Corps of Engineers (USACE) Floodfighting Center of Excellence for this application. The materials are inherently floodproof and not susceptible to flooding. Additionally, the revetment materials and HESCO barrier are required to be located adjacent to the floodway to carry out their intended function.

Under ideal circumstances, a project of this nature could be designed, permitted, procured and executed in a traditional manner. However, due to the significantly shortened timeframe to provide near-term flood fighting protection, this project was carried out based on best professional judgment of licensed CBJ engineers in consultation with the U.S. Army Corps of Engineers (hydraulic engineers, floodfighting experts, and contracted technical advisors), and in tandem with the development of a 2D surface water hydraulic and hydrologic model of the Mendenhall River under possible GLOF conditions.

Due to the compressed timeframe to complete this work, and because a standard step backwater analysis was not performed as a part of the no-rise analysis, a flood zone exception is requested. Specifically, exceptions from CBJ

- (1) [CBJ 49.70.400(e)(3)(E)] – Description of the plan for maintenance of the altered portion of the watercourse so that the flood-carrying capacity is not diminished.
- (2) [CBJ 49.70.400(f)(4)] – Control filling, grading, dredging, and other development that may increase flood damage.
- (3) [CBJ 49.70.400(f)(5)] – Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters or that may increase flood hazards in other areas.
- (4) [CBJ 49.70.400(g)(1)(A)] – Design, modify, and anchor new construction and substantial improvements to prevent flotation, collapse, or lateral movement of the structure(s)
- (5) [CBJ 49.70.400(g)(5)] – Floodplain development permit requirements.
- (6) [CBJ 49.70.400(i)(2)] – Encroachments, including fill, new construction, and other development, except subdivisions, within a floodway are prohibited unless an engineer licensed in the State of Alaska submits a hydrologic and hydraulic analyses to the director indicating that the encroachment would not result in any increase in flood levels during the occurrence of the base flood discharge. The hydrologic and hydraulic analyses must be performed in accordance with standard engineering practice acceptable by the Federal Emergency Management Agency.

Hydrologic modeling files associated with the “No-Rise Analysis” are located in CBJ electronic public folders and are available for review. *HESCO Technical Specifications* and *HESCO Construction Guide for Engineers* are included as attachments 2 and 3 for the Flood Zone Exception Application, respectively, and provide information regarding the floodproofing of the HESCO product as well as the manufacturer’s guidelines for installation.

Installation work was carried out in accordance with manufacturer’s guidelines and modified as necessary based on site considerations, with U.S. Army Corps of Engineers Technical Advisor and manufacturer’s representative guidance for the duration of the project. Maintenance of the modified watercourse will adhere to current CBJ practices for armoring work, and to maintenance and repair procedures outlined in the *HESCO Construction Guide for Engineers* document.



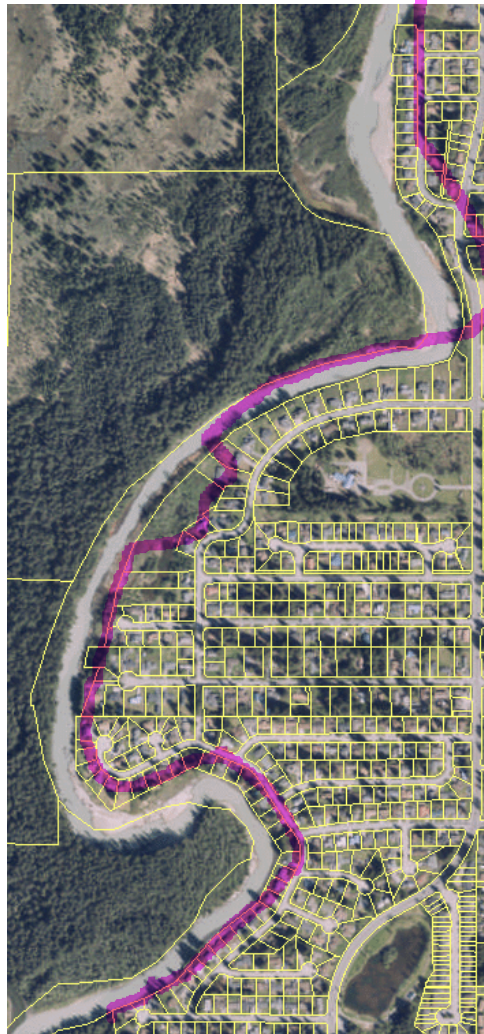
City and Borough of Juneau
Engineering & Public Works Department
155 Heritage Way
Juneau, Alaska 99801
Telephone: 586-0800

TO: Jill Lawhorne, CBJ CDD Director
DATE: June 30, 2025
FROM: Nate Rumsey, CBJ EPW Deputy Director *Nate Rumsey*
RE: HESCO Barrier Phase 1 Project No-Rise Analysis

The purpose of this memorandum is to demonstrate that the proposed HESCO Barrier Phase 1 Project does not cause a rise in the 100-year flood elevations along the Mendenhall River.

Background: The City and Borough of Juneau (CBJ) authorized the execution of the subject project subsequent to Federal, State, and Local Emergency Declarations stemming from glacial lake outburst flooding (GLOF) which occurred in August, 2024. The project includes installation of HESCO flood barriers and associated bank revetment to protect the Mendenhall Valley from future, likely GLOF flooding. This project covers the east bank of the Mendenhall River from 9399 Rivercourt Way upstream to 4395 Riverside Drive (Figure 1).

Figure 1: Project Location (highlighted)



This section of the Mendenhall River is located in a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) Zone AE, and the improvements include several riprap revetments that are located within the mapped floodway. Additionally, a 2-mile, continuous temporary flood barrier was installed along the east bank of the Mendenhall River from 9399 Rivercourt Way upstream to 4395 Riverside Drive. CBJ contracted with Michael Baker, International (MBI) to perform hydrologic and hydraulic analyses in accordance with standard engineering practice to determine the potential increase in flood levels within the community during the occurrence of the base flood discharge due to this project.

FEMA Information for this Area: The FEMA SFHA information for the project area is provided by the Flood Insurance Study (FIS) for the City and Borough of Juneau and the Flood Insurance Rate Maps (FIRM), numbers 02110C1239E, 02110C1238E, 02110C1526E, and 02110C1527E (Attachments 1 through 4), all dated September 2020. A comparison of SFHA boundaries along the project path to the alignment of the HESCO barrier is shown in Attachment 5.

Through CBJ, MBI developed a two-dimensional surface water model utilizing the latest current Hydrologic Engineering Center's River Analysis System (HEC-RAS, USACE 2024) software (v6.6) incorporating the best available data. The structure and content of the model meets the typical standards of a 2D Base Level Engineering (BLE) Level D model (FEMA 2021) by incorporating hydraulic structures and calibrating historical data but not including channel bathymetry. The selected level of modeling detail was chosen based on the best available data and compressed project schedule.

Description of Proposed Improvements: As this project was directed subsequent to the aforementioned Federal, State, and Local Emergency Declarations, and in anticipation of likely future GLOF flooding in the summer of 2025, traditional design documents were not issued for construction for the proposed work. The work incorporated two primary components:

First, revetments consisting of Class III riprap and shot rock, were stabilized by excavating existing material from the riverbank and replacing in a manner as to not decrease cross-sectional area or flow capacity. This revetment work was carried out at the following locations:

- 3835 - 3851 Killewich Drive (5 parcels)
- 3495 – 3499 Meander Way (4 parcels)
- 9387 Rivercourt Way - 3323 Meander Way (4 parcels)

Attachment 6 shows the revetment locations, typical cross-section comparisons for work at each location, net volumetric increase in floodway capacity due to revetment work, and photographs of bank conditions prior to armoring. The primary purpose of the revetment work is to ensure the integrity of the proposed temporary flood barrier, which is anticipated to remain in place for up to 10 years while a long-term solution is implemented.

Secondly, a continuous, temporary flood barrier was established to prevent floodwater inundation due to future GLOF events. The barrier consists of HESCO Floodline Concertainer™ units which were generally placed above the riverbank and upland of existing revetments.

Baseline for Comparison: The purpose of this analysis is to determine whether, and to what extent, the improvements in the mapped floodway impact flood elevations in the area. In this project area, and since the latest FIRM maps were published, significant bank erosion has occurred in recent years, causing widening of the river's flow channel. This widened channel may have resulted in a drop in flood levels from the published flood elevations. However, our collective analysis did not attempt to quantify changes in the water surface elevation from the original mapped condition. Rather, this analysis focused on understanding impacts to flood elevations compared to existing conditions based on the latest spatial, terrain, map, and hydrology data, which was consolidated through extensive coordination between Federal, State, and local governments. This includes topographic survey and terrain data, and high-resolution imagery collected in October 2024 (after the latest flood event).

Revetment No-Rise Analysis: The revetment activities were determined to cause no rise to the 100-year flood elevations. The rationale for this determination is based on examination of the individual factors that could impact the water surface elevation, each of which are described below.

For this section of the Mendenhall River, the three primary parameters that have the potential to impact the water surface elevation are the cross-sectional area, the Manning's roughness coefficient, and the channel slope. Each of these parameters is discussed below, along with an explanation of how they have been analyzed for this project.

Cross-sectional Area: The most significant model parameter that controls water surface elevation is the channel shape which is represented in a 1D model through channel cross sections. A significant change in channel shape can change the channel's conveyance capacity and potentially impact flood elevations. Generally, reducing the channel's cross sectional area results in a water surface elevation increase, and increasing the channel's cross sectional area results in a water surface elevation decrease.

For the revetment improvements, CBJ Engineering ensured that the armored ground surface closely matched the surveyed ground surface. At each of the parcels where riprap revetments were improved, cross-sections were developed to compare the pre-existing and proposed ground surfaces to ensure that the changes would not result in a reduction in the channel's cross-sectional area and associated conveyance capacity. In each location, the improvements slightly increase the channel's cross-sectional area, which is expected to either maintain or reduce flood elevations. The cross-section comparisons and associated calculations demonstrating net increase in cross-sectional area is provided as Attachment 7.

Manning's Roughness Coefficient "n": The frictional resistance to flow is represented in the FEMA effective HEC RAS 1D model using the Manning's "n" roughness coefficient. Unique roughness values can be assigned for the main channel as well as for each bank. While this parameter does not impact modeling results as much as the channel shape, significant changes to roughness coefficients can result in changes to modeled water surface elevations. Generally, notable increases in Manning's "n" will increase modeled flood elevations and notable decreases in Manning's "n" will decrease modeled flood elevations.

In the project area, the shapes of the pre-existing channel banks were undulating and non-uniform, and the banks were lined with root wads, large voids and other obstructions left by localized bank erosion and sloughing, resulting in obstructed and inefficient water flow along the riverbank. The FEMA effective model discussed above represents the entire existing channel (both the banks and the main channel) with a Manning's "n" value of 0.033. Generally, the roughness of the banks is expected to be higher than the roughness of the main channel, but because the same value is used for both the main channel and the banks, this value is understood to be a composite value representing the average flow resistance for the entire channel.

Under the post-construction conditions, the new riprap revetments are uniform and non-undulating. Providing a uniform, non-undulating surface is expected to reduce the overall channel flow resistance and improve flow efficiency, which would decrease proposed water surface elevations.

The banks were lined with Class III riprap and shot rock. The roughness value of these materials is estimated to range from 0.03 to 0.04 under flood conditions. Understanding that the composite roughness of the entire existing channel is 0.033, the newly installed riprap is not expected to increase the channel roughness or impact the water surface elevation at flood events.

Longitudinal Slope: A channel's longitudinal slope impacts the channel's conveyance capacity. In this case, the channel's longitudinal slope is unchanged by the revetment, and will not impact the water surface elevations.

Surface Water Model Analysis: Through use of the MBI-developed model, an analysis was performed to identify any impact to the 100-year flood elevations due to the placement of HESCO flood barriers using a simulated 1% annual exceedance probability flood event, both with and without HESCO barriers. This analysis considered potential surface water rise upstream, along, and downstream of the proposed work. No rise was indicated within the resolution provided by the model. See Attachment 8 for MBI's *Mendenhall River Preliminary 2D Surface Water Model Report*. Note that MBI's model was developed directly from existing conditions, and not derived from the FEMA Effective Model. With that, the analysis of the impact of HESCO flood barriers on 100-year flood elevations was not performed specifically to adhere to the traditional FEMA No-Rise Certification model comparison scenarios. See Attachment 9 for more information about BLE models.

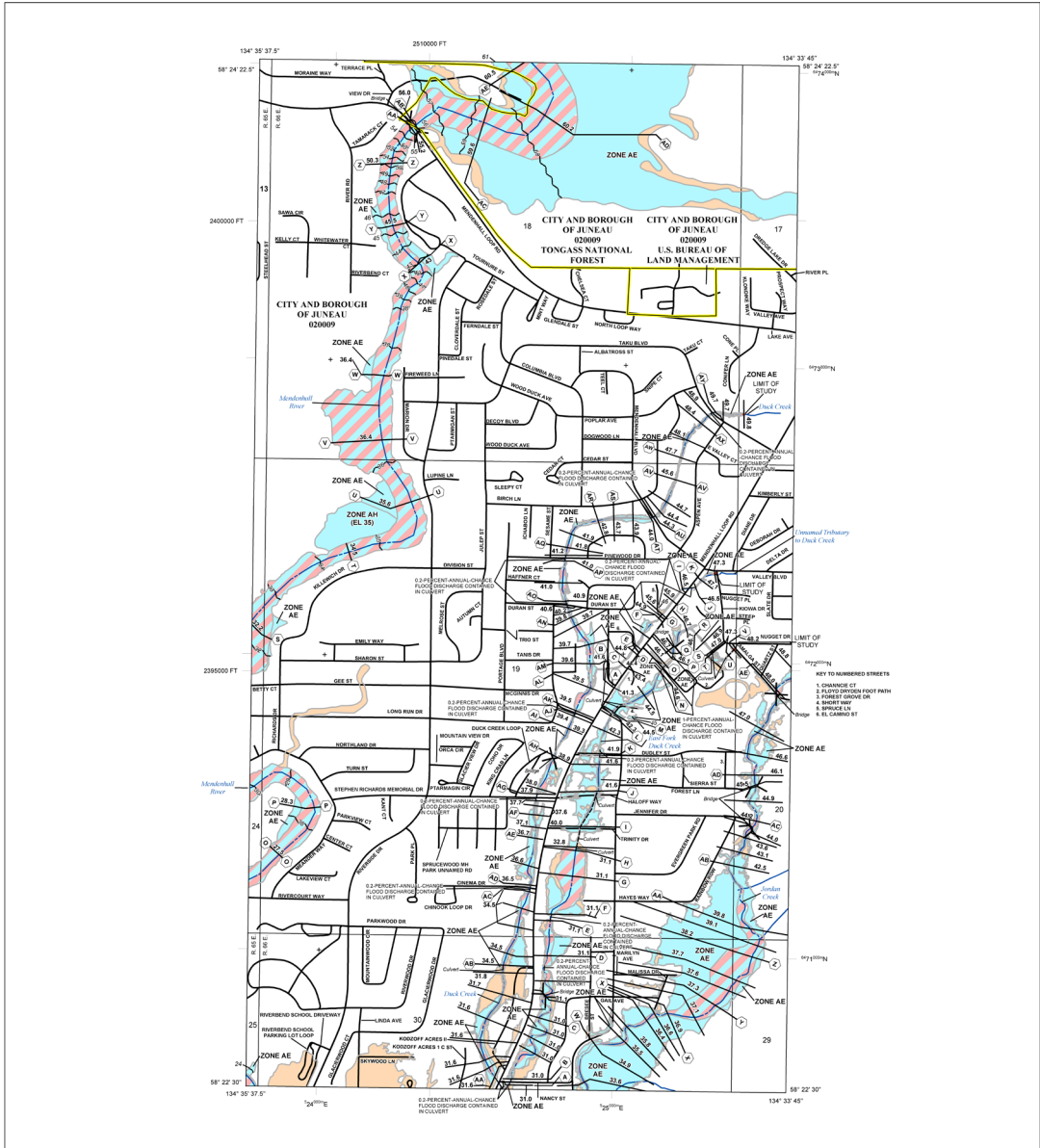
Conclusion: The HESCO Barrier Phase 1 project will not cause a rise in the 100-year water surface elevations of the Mendenhall River. This determination was made through both a careful analysis of key channel parameters that would drive a water level rise, as well as through hydrologic and hydraulic modeling.

If you have any questions regarding this analysis or if you would like to discuss this memorandum, please feel free to contact me at nate.rumsey@juneau.gov or 907.586.0800 x4182.

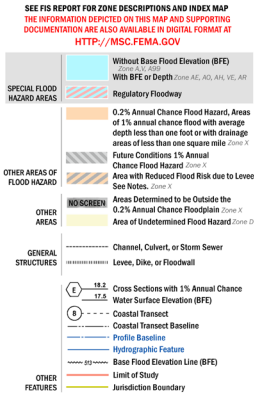
Attachments:

1. FIRM Panel 02110C1239E (1 page)
2. FIRM Panel 02110C1238E (1 page)
3. FIRM Panel 02110C1526E (1 page)
4. FIRM Panel 02110C1527E (1 page)
5. Comparison of barrier alignment to SFHA (2 pages)
6. Revetment Construction Details (11 pages)
7. Revetment Cross-Section Comparisons by Location (20 pages)
8. Mendenhall River Preliminary 2D Surface Water Model Report (37 pages)
9. FEMA: Frequently Asked Questions about Base Level Engineering (5 pages)

Attachment 1: FIRM Panel 02110C1239E



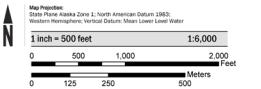
FLOOD HAZARD INFORMATION



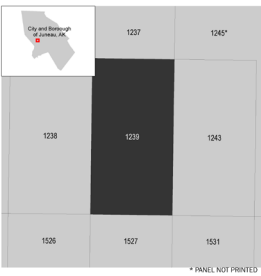
NOTES TO USERS

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Communities receiving this map should...
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SCALE

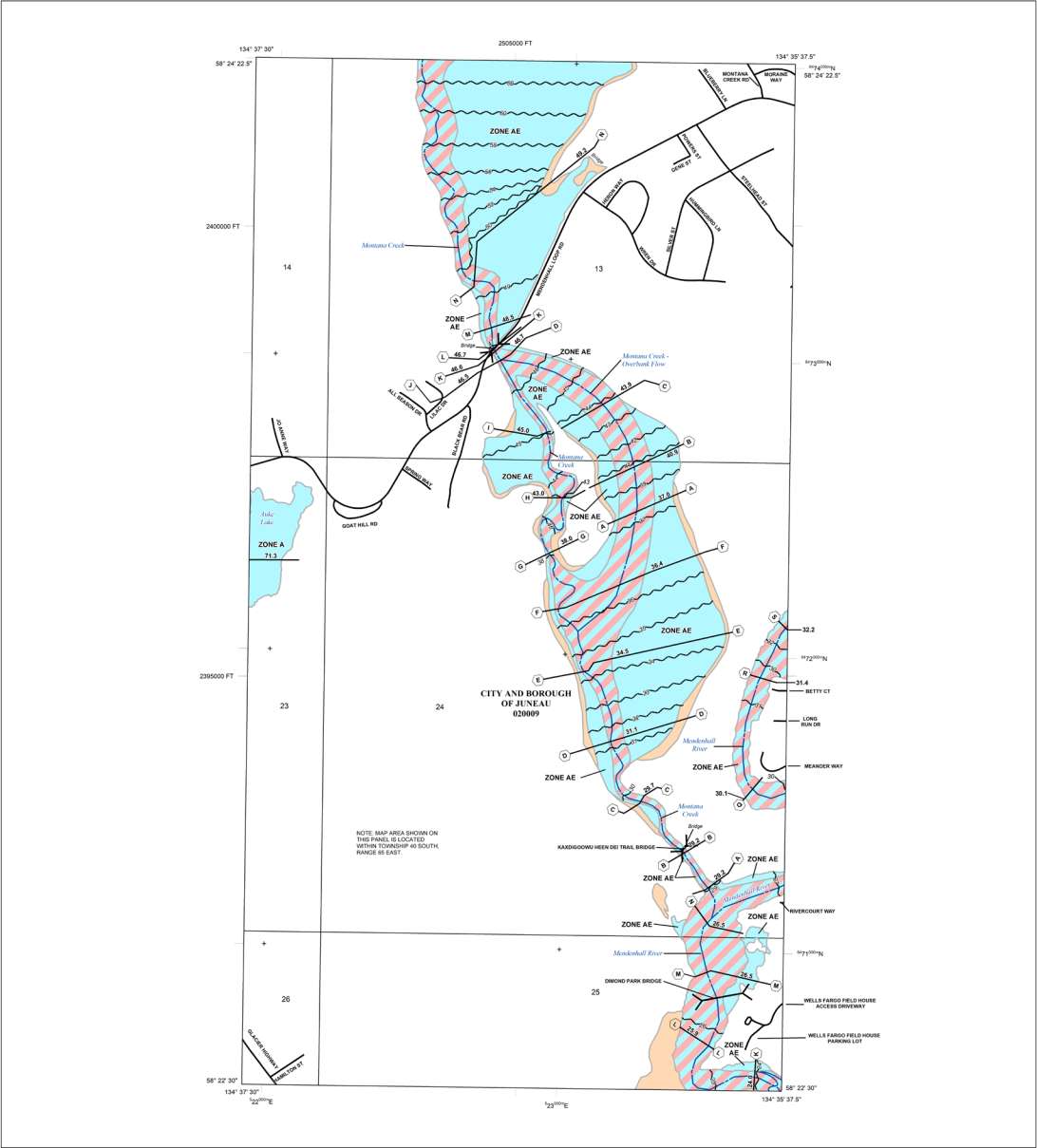


PANEL LOCATOR



FEMA
National Flood Insurance Program
CITY AND BOROUGH OF JUNEAU, AK
www.1239 or 2700
FEMA
Panel Contains:
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NUMBER: C00009
SUFFIX: 1239 E
VERSION NUMBER: 2.3.3.4
MAP NUMBER: 02110C1239E
MAP REVISION: SEPTEMBER 18, 2020

Attachment 2: FIRM Panel 02110C1238E



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP. THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://msc.fema.gov)

	Without Base Flood Elevation (BFE)
	With BFE or Depth (Zone AE, AD, AH, VE, AR)
	Regulatory Floodway
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile (Zone X)
	Future Conditions 1% Annual Chance Flood Hazard (Zone X)
	Area with Reduced Flood Risk due to Levee (See Notes, Zone X)
	Area Determined to be Outside the 0.2% Annual Chance Floodplain (Zone X)
	Area of Undetermined Flood Hazard (Zone D)
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
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	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

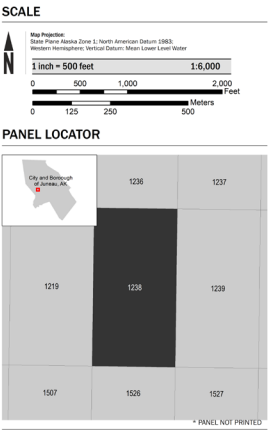
NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including future versions of the FIRM, data in other products, or the National Flood Insurance Program, in general, please call the FEMA Map Information Exchange at 1-877-FEMA-8087 or visit the FEMA Map Service Center website at msc.fema.gov. Available products may include: previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of the map. Many of these products can be viewed or obtained directly from the website. Users may download the map data for use in their own applications, but they may not be used for any other purpose without the express written permission of FEMA. For more information, please contact FEMA.

Communities receiving flood insurance must obtain a current copy of the adjacent panel as well as the current FIRM panel. These may be ordered directly from the Map Service Center at the bottom right of this panel.

For community and countywide map data used in the Flood Insurance Study report for this jurisdiction, please contact FEMA.

Base map information shown on this FIRM was provided in digital format by the City and Borough of Juneau, Alaska Department of Natural Resources (DNR), Bureau of Land Management (BLM), U.S. Forest Service, and the United States Geological Survey (USGS). This information was compiled in vector map format using the time period 1997-2015. Other information was derived from digital topography at a 6-foot resolution from photography dated 2013.



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
CITY AND BOROUGH OF JUNEAU, AK

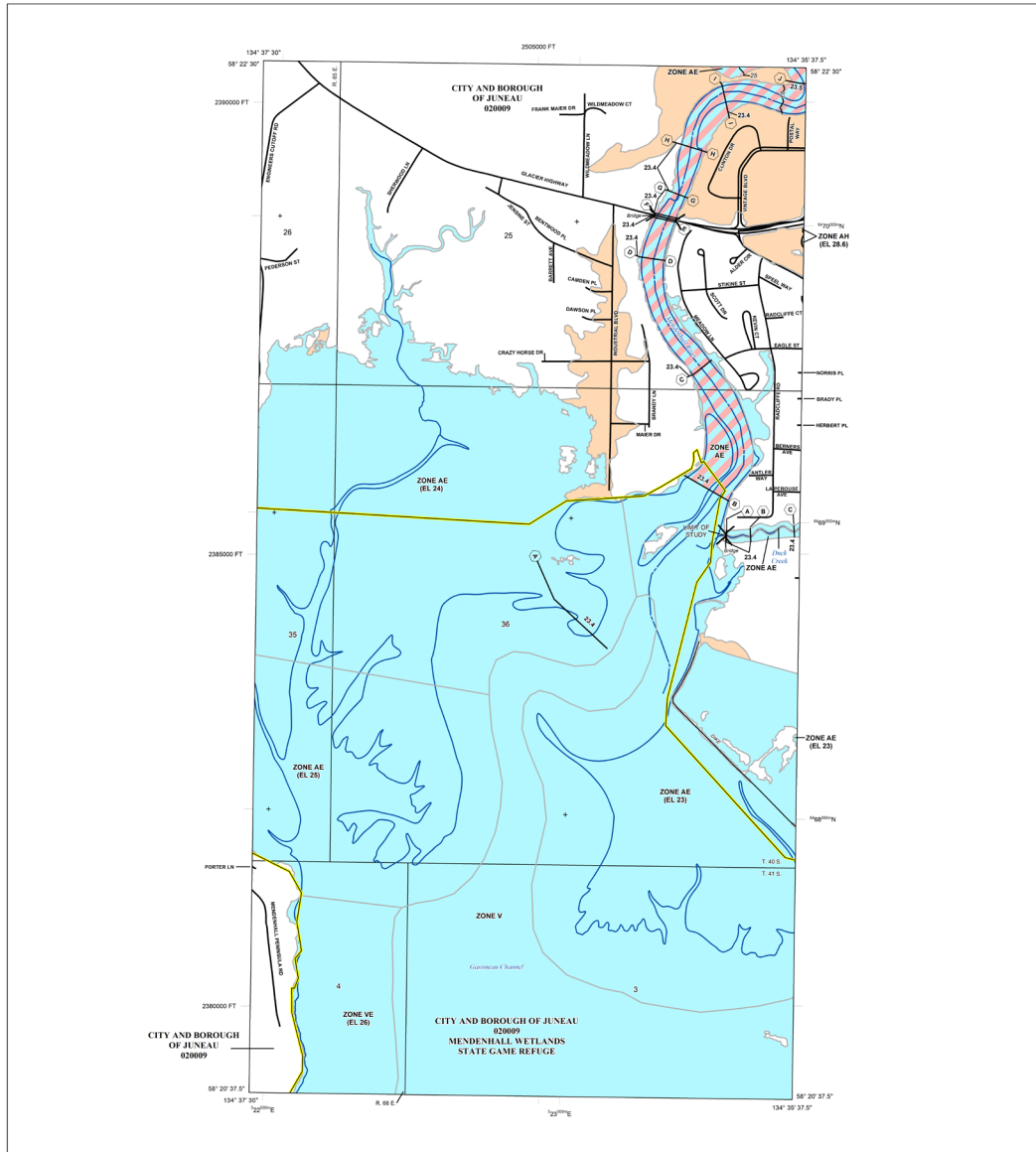
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Panel Contains:

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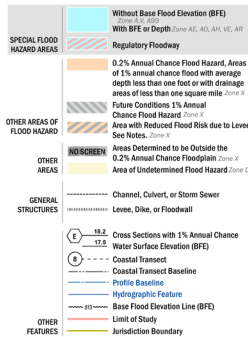
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MAP NUMBER: 02110C1238E
MAP REVISED: SEPTEMBER 18, 2020

Attachment 3: FIRM Panel 02110C1526E



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT:
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)



NOTES TO USERS

For information and questions about the form, available products associated with this FRM, including historic versions of the FRM, how to order products or the National Flood Insurance program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-4MATH (1-877-336-2627) or visit the FEMA Map Service Center at www.fema.gov/mfip. Available products may include a separate agent's Local Flood Insurance Study (LFIS), Flood Insurance Study (FIS), Flood Insurance Rate Map (FIRM), Flood Map of Change, a Flood Insurance Study and/or additional products of map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each product and the date of the last update to the product.

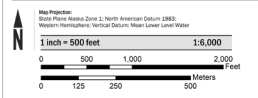
Communities answering and an adjacent FRM panels must obtain current copies of the adjacent panel as well as the current FRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map date refers to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent call the National Flood Insurance Program at 1-800-438-8620.

Base map information shown on this FRM was provided in digital format by the City and Borough of Juneau Alaska Department of Natural Resources (AK DNR), Bureau of Land Management (BLM), U.S Forest Service, and the United States Geological Survey (USGS). This information was compiled at various map scales during the time period 1997-2016. Other information was derived from digital orthophotography at a 6-inch resolution from photography dated 2013.

SCALE



PANEL LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
CITY AND BOROUGH OF JUNEAU, AK

PANEL 1526 OF 2700

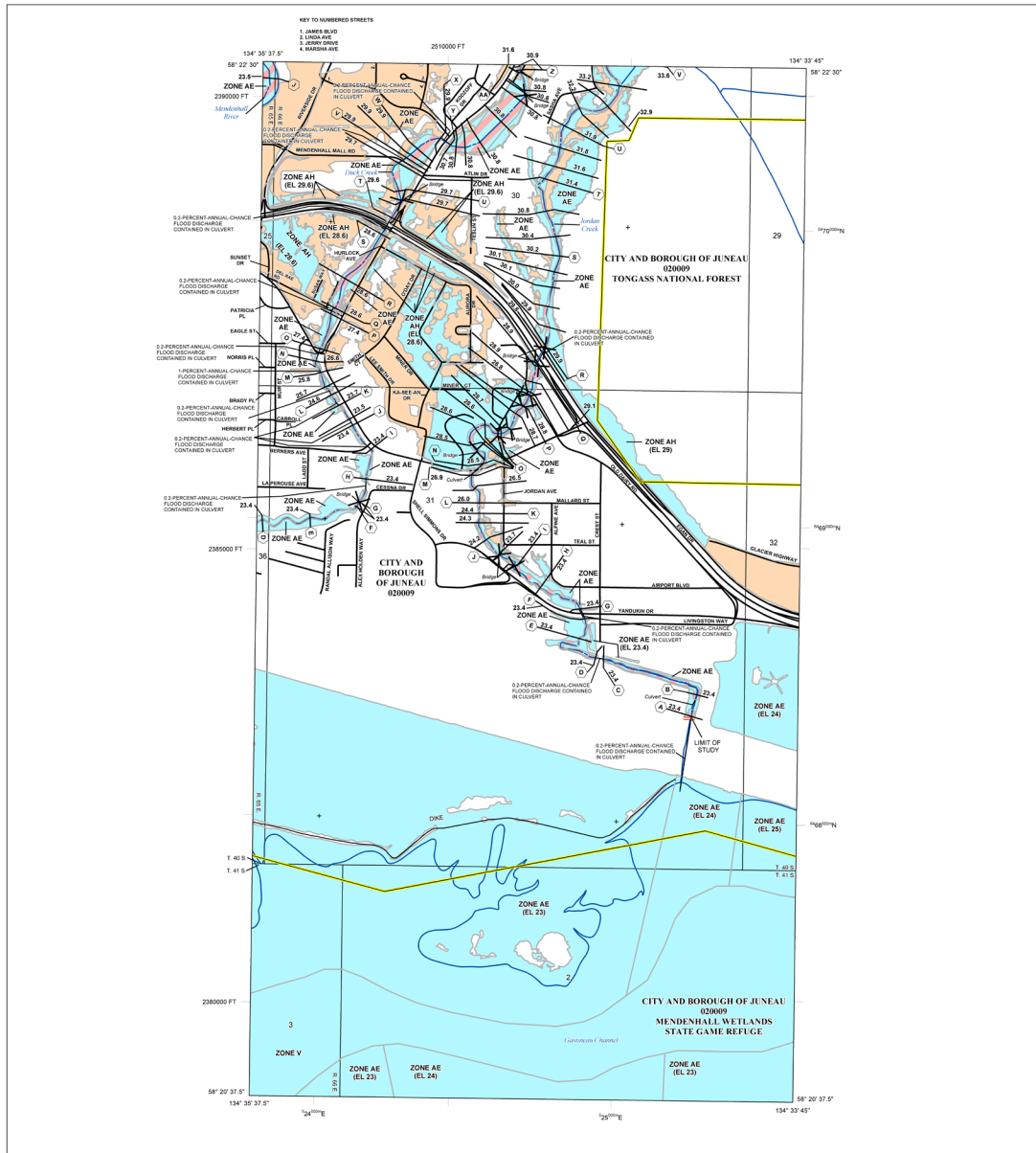


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VERSION NUMBER

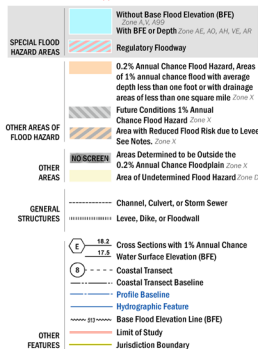
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MAP REVISED
SEPTEMBER 18, 2020



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)



NOTES TO USERS

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Comments regarding the use of FIRM panels must include a current copy of the adjacent panel as well as the following information:

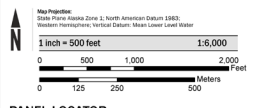
- Name of the community
- Community number
- Date of the FIRM
- Insurance study for that jurisdiction

For community and countywide map data available in the FIRM Insurance Study report for that jurisdiction, please contact the National Flood Insurance Program Data Center at 1-800-358-6242.

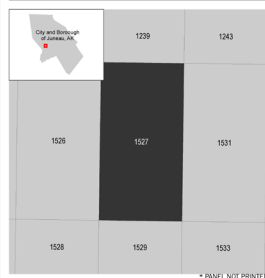
To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-358-6242.

Base map information shown on this map was prepared in digital format by the City and Borough of Juneau and the Alaska Division of Geomatics, Bureau of Land Management, U.S. Department of the Interior, and the United States Geological Survey (USGS). The information was compiled at various map scales during the time period 1957-2010. Other information was derived from digital orthorectified data at a 6-inch scale.

SCALE



PANEL LOCATOR



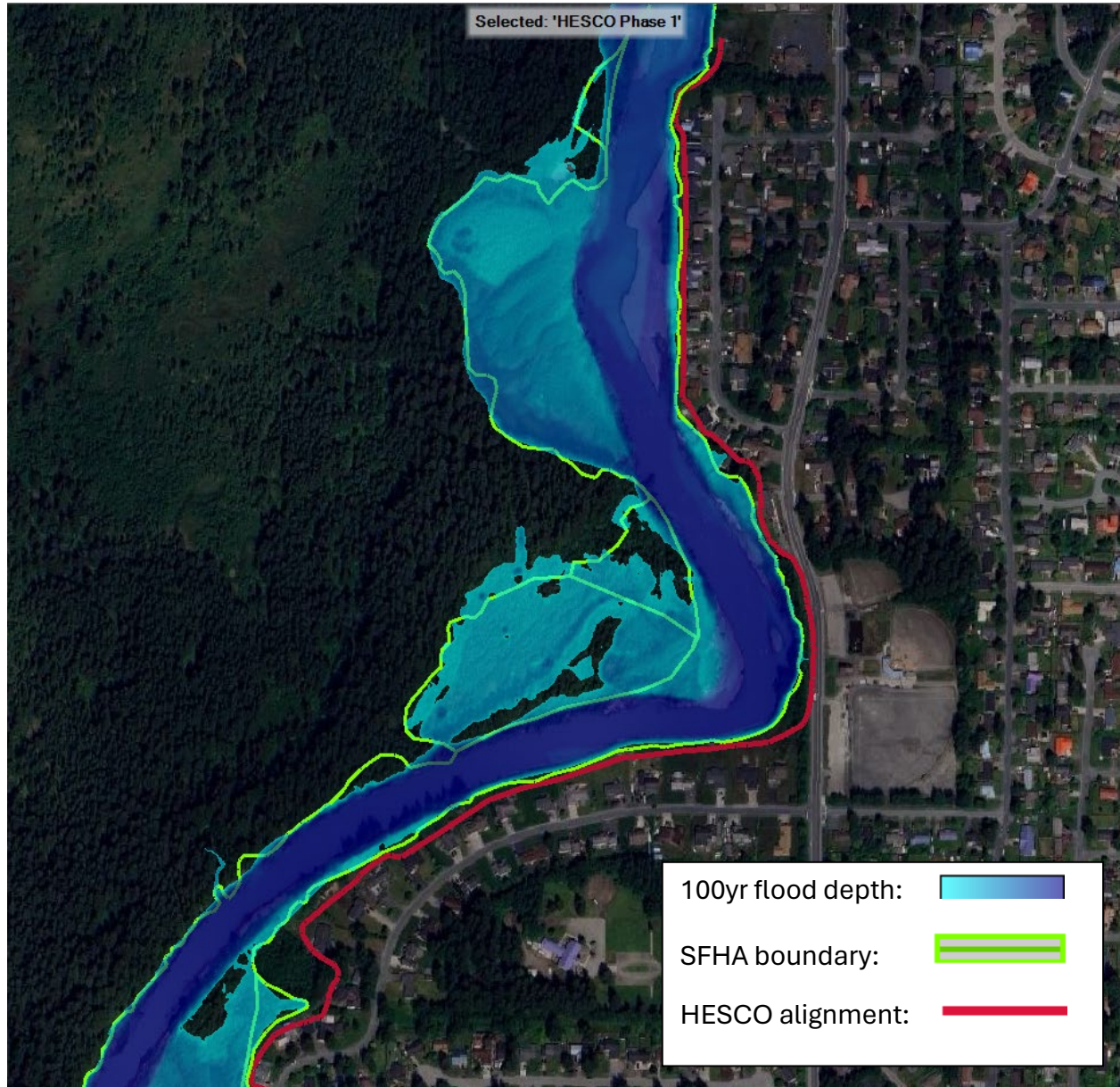
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
CITY AND BOROUGH OF JUNEAU, AK



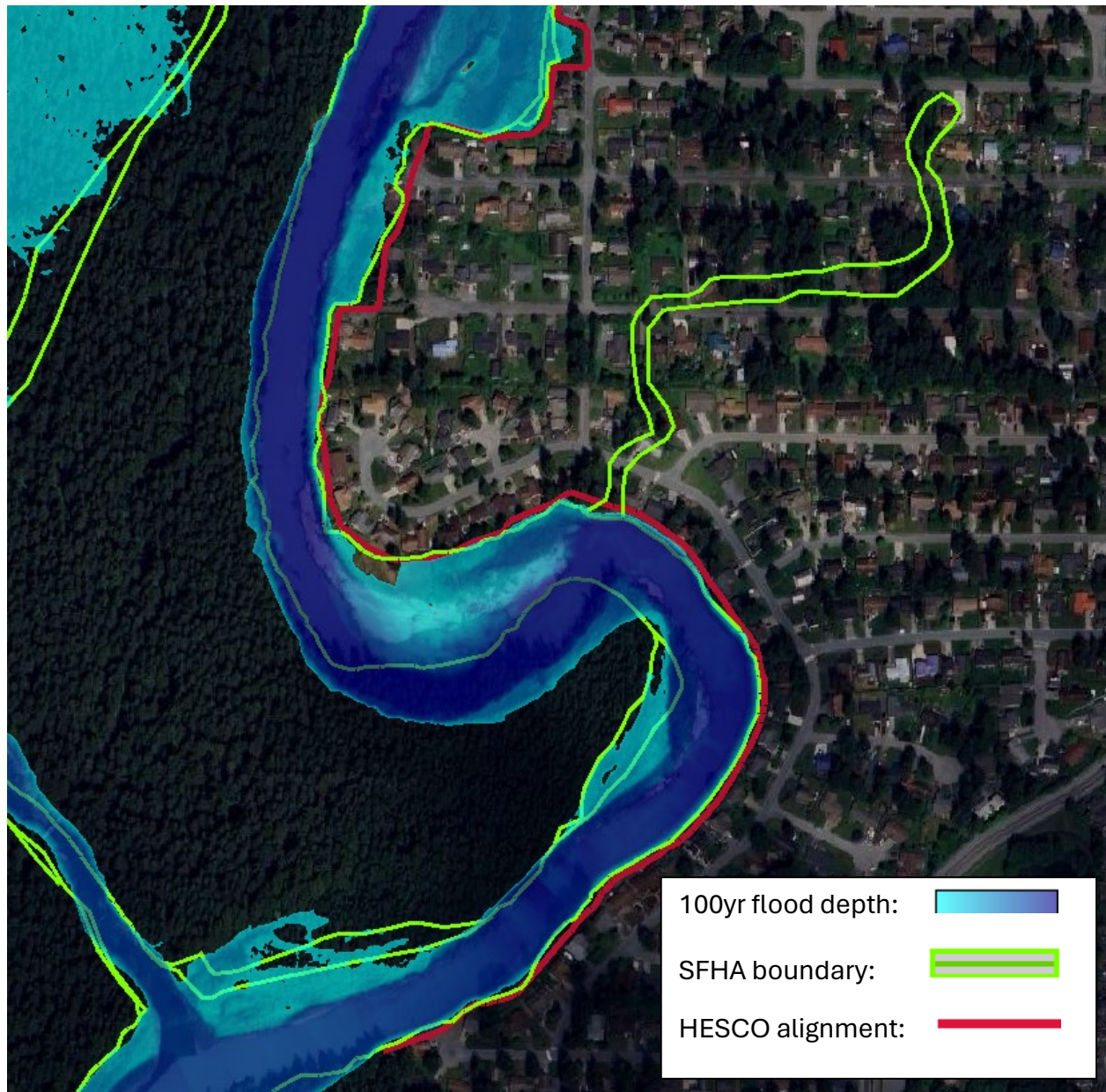
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CITY AND BOROUGH	020009	2527	E

VERSION NUMBER
2334

MAP NUMBER
02110C1527E
MAP REVISED



Attachment 5: A comparison between the location of the SFHA boundary and the location of the HESCO barrier (Northern extent of project)



Attachment 5: A comparison between the location of the SFHA boundary and the location of the HESCO barrier (Southern extent of project)

Project Name: Riverbank Armoring - HESCO Flood Barrier Phase I -

Project Address: along the east bank of Mendenhall River from 9399 Rivercourt Way north to 4395 Riverside Drive.

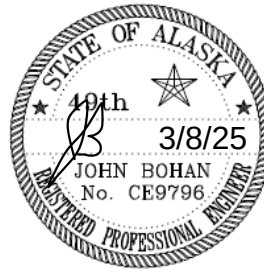
Project Armoring Addresses (along east riverbank of Mendenhall River):

S. Meander: 9387 Rivercourt Way and 3315 to 3323 Meander Way - approx. 365 l.f. armoring

N. Meander: 3491 to 3499 and CBJ Parcel (NHN) Meander Way – approx. 250 l.f. armoring

Killewich: 3835 to 3849 Killewich Drive – approx. 500 l.f. armoring

Applicant: City and Borough of Juneau Public Works and Engineering Department
John Bohan – PE – CE 9796 – City Engineer



Design Approach:

The design approach followed for the riverbank armoring is to ensure the FEMA regulatory floodway cross sectional area is maintained or increased. The strategy is to remove the erodible soils and replace them with non-erodible riprap and not decrease the cross sectional area of the FEMA regulated floodway.

The design utilized an evaluation of the horizontal alignment to best fit the existing riverbank alignment with the design armoring cross section, sloped at 1.5H to 1V. to ensure bank stability, and maintain the existing streambank alignment. Survey data provided by the DOWL October 2024 UAV survey and site validations were used to generate cross sections and calculate cuts and fills using the average end area method. The generated cross sections and horizontal layout were carefully analyzed to balance cuts and fills and were reworked multiple times to ensure the amount of fill being removed will exceed the amount being places, ensuring the conditions for “replacement in kind” are met and the regulated floodway area is not decreased.

In addition to ensuring the cross-sectional area of the floodway is not restricted and the armored section exceeds the existing unarmored section, the roughness coefficient for riprap armoring ($n=0.03$ to 0.04) is similar to or less than the roughness coefficient for that used by the FEMA effective HEC RAS 1-D model ($n=0.033$) for the Mendenhall River floodway. The existing riverbanks are also undulating and non-uniform with irregularities of root wads, large voids and other obstructions left by localized bank erosion and sloughing, resulting in obstructed and inefficient water flow along the riverbank. The armoring will result in a non-erodible uniform surface that will be more efficient at passing water flow without the obstructions of the eroded riverbank.

The toe of the armoring and the scour toe will follow the adjacent channel bottom and will not change the channel slope or bottom contour, which will not change the flow of the river.

The cross sections and calculations for the armoring at each of the locations are provided at the end of this document.

S. Meander Armoring

The bank armoring at these 4 properties will fill in the gaps left by the 4 homeowners who didn't armor their properties during the adjacent armoring work that occurred in 2022 and 2023. Armoring these properties is vital to ensuring the integrity of the HESCO Flood Barriers to prevent a breach in the barriers that could be caused by continued riverbank erosion. The FEMA Base Flood Elevation used at this location was taken from Section "O" at elevation 27.5, from the FEMA Flood Maps, which is immediately upstream of the armoring area.

9387 Rivercourt Way: a singular property that requires armoring to match the adjacent armored properties. The erosion of the riverbank has created a steep riverbank with highly erodible soils, but being protected by the armoring on each side. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on either side. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 9 cubic yards, creating a larger floodway than currently exists.

3315 to 3323 Meander Way: - three contiguous properties that require armoring to match the adjacent upstream and downstream armored properties. The erosion of the riverbank has created a steep erodible riverbank. The eroded riverbank slopes are steeper on the downstream properties requiring more material removal than the upstream properties to maintain a uniform horizontal alignment matching the exiting river. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on either side. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 131 cubic yards, creating a larger floodway than currently exists.

N. Meander Armoring

The bank armoring at these 4 properties will repair existing riprap bank armoring that has been compromised over many years of changes and downcutting of the river. Rebuilding the existing armoring is critical in this location because the HESCO alignment is confined to very close to the top of the riverbank, requiring a sound riverbank to prevent riverbank erosion from breaching the flood barriers. The FEMA Base Flood Elevation used at this location is elevation 30.4. This elevation was determined by interpolating between FEMA Flood Maps Section "Q" (el. 30.1) 250' downstream of the armoring location and Section "R" (el. 31.4) 1285 upstream of the armoring location.

The general slope of the existing riverbank has some undulations from undermined armoring sloughing and washing away due to bank erosion and river downcutting. Existing riprap that meets the requirements for the new armoring will be salvaged and reused, and the remaining unsuitable and highly erodible soils will be removed and replaced with riprap with shot rock filter. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on either side. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 6 cubic yards, creating a larger floodway than currently exists.

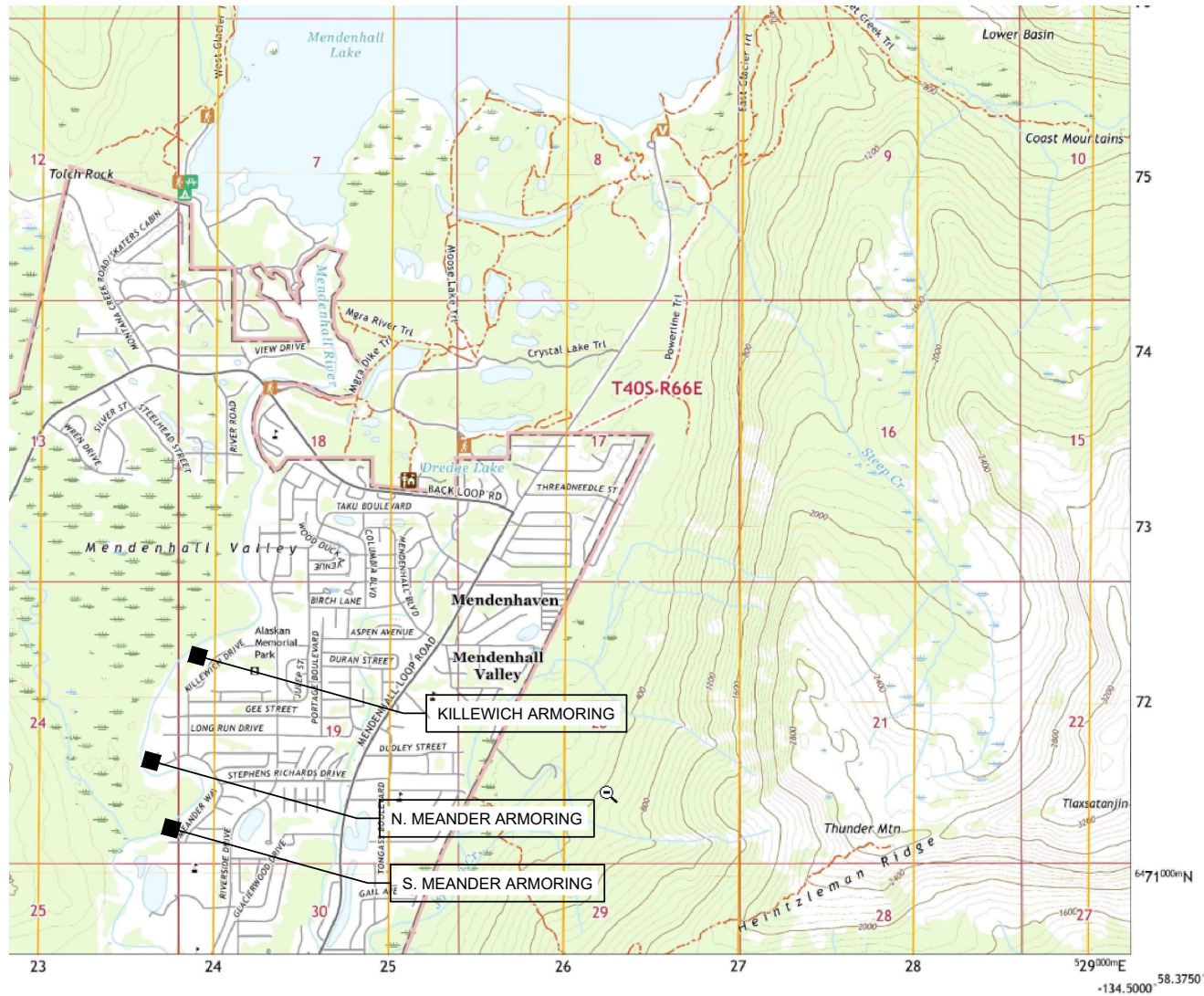
Killewich Armoring

The bank armoring at these 4 properties will repair eroding riverbanks with trees being undermined by the erosion and falling towards the river. The highly erodible soils in this area could mimic what occurred adjacent to the Riverside Condos in the 2023 GLOF, eroding a substantial chunk of land and undermining the buildings. The HESCOs in this location are placed away from the riverbank, but would be compromised if the riverbank were to erode as it is already showing to be doing fairly rapidly.

The riprap section will connect to existing armoring at the upstream end of the work and relatively stable unarmored slope downstream. The FEMA Base Flood Elevation used at this location is elevation 34.5 from FEMA Flood Maps Section “T”, which is immediately upstream from the armoring location.

The general slope of the existing riverbank has significant undulations, cavities, undermined tree root wads and variations from sloughing and bank erosion of the fine, highly erodible soils comprising the riverbank. This material will be excavated and replaced with the rip-rap and shot rock filter section to protect the riverbank from further erosion. The topography of the lots drops as the armoring progresses downriver, requiring more material to be excavated from the downstream lots to maintain a consistent horizontal alignment matching the river. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on the upstream side and the existing more stable riverbank on the downstream end. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 244 cubic yards, creating a larger floodway than currently exists.

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

1	-	COVER AND LOCATION MAP
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3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING		COVER AND LOCATION MAP		SHEET: 1 of 7
Date	Description	Intls.						

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

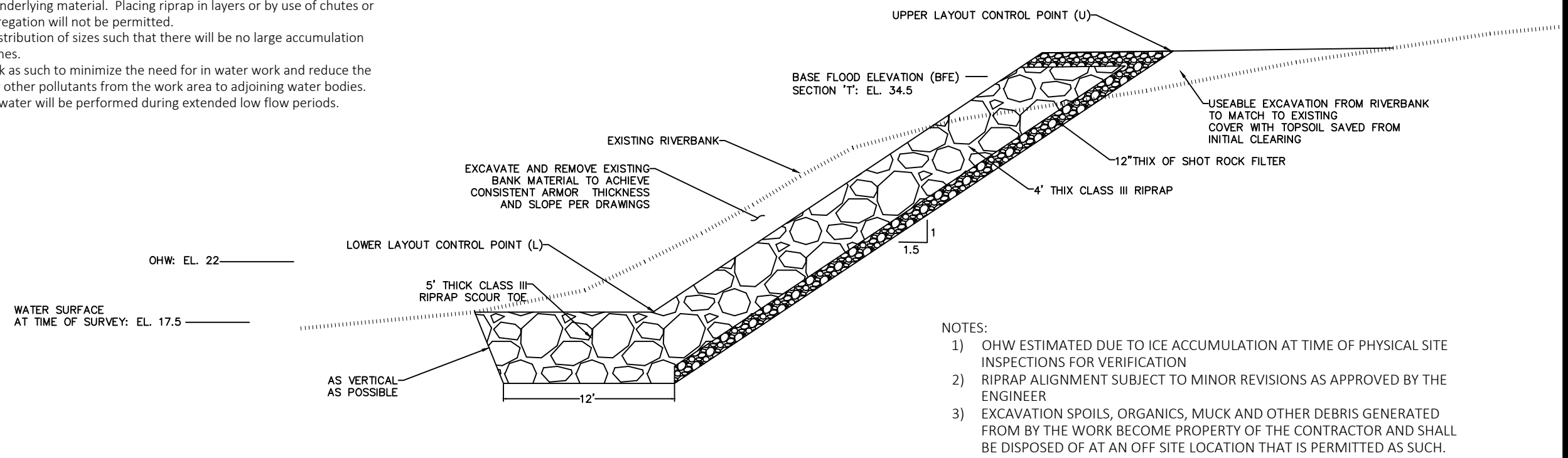
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

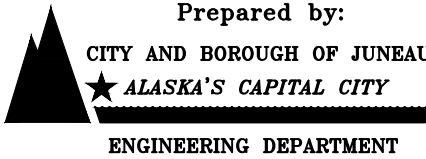
CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.

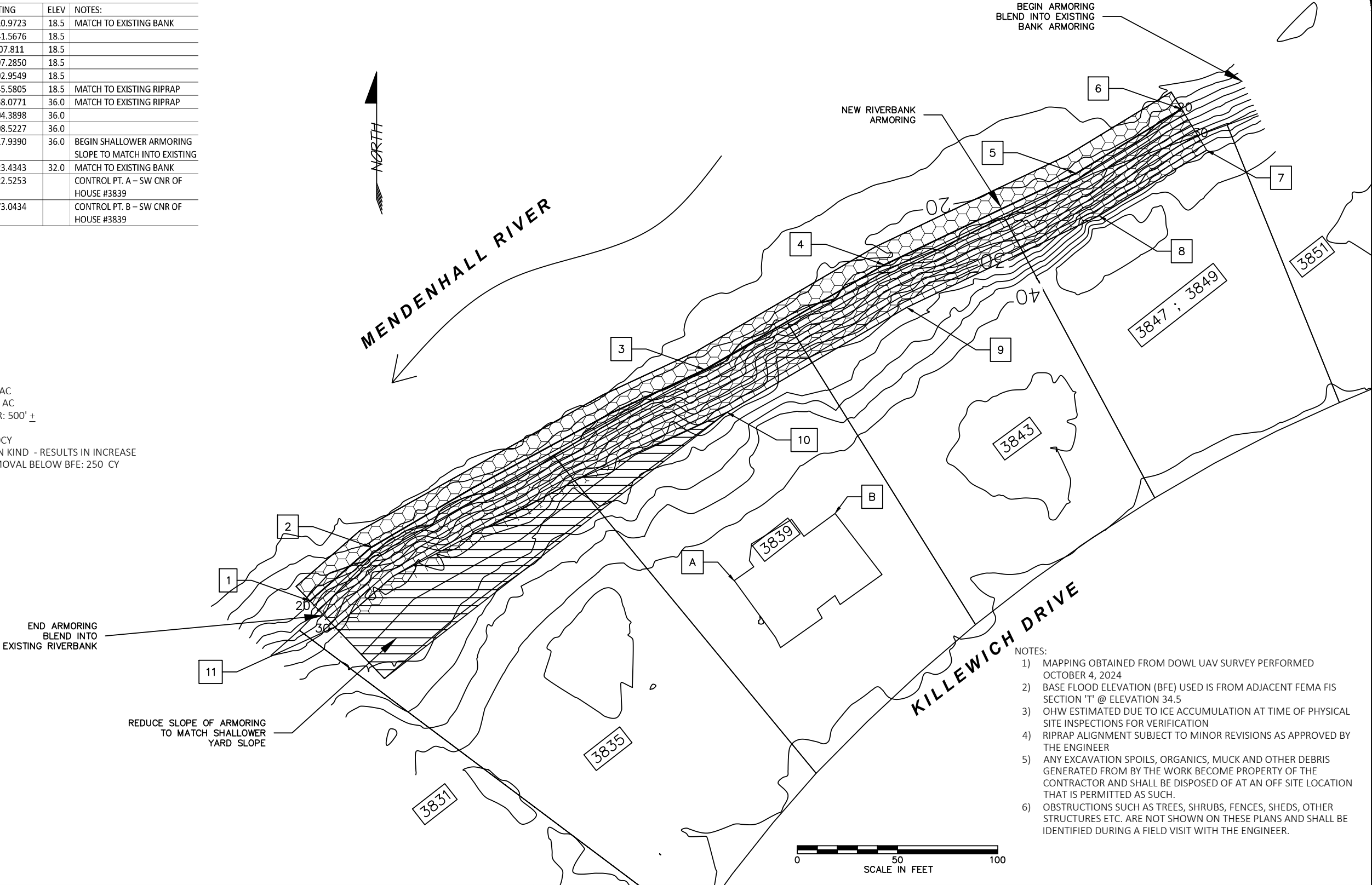


- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 3) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	KILLEWICH ARMORING TYPICAL SECTION			SHEET: 2 of 7
Date	Description	Intls.			DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown	

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 500' ±
 - 4) TOTAL RIPRAP VOLUME: 4,950 CY
 - 5) RIPRAP VOLUME BELOW OHW: 2210CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY



- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

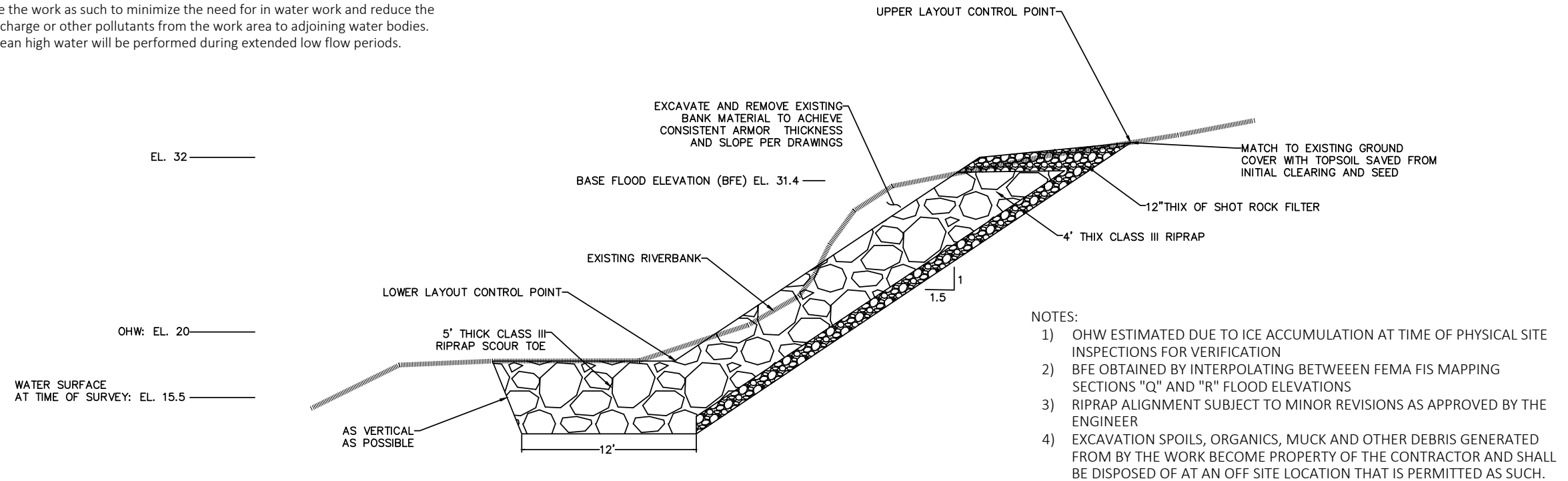
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

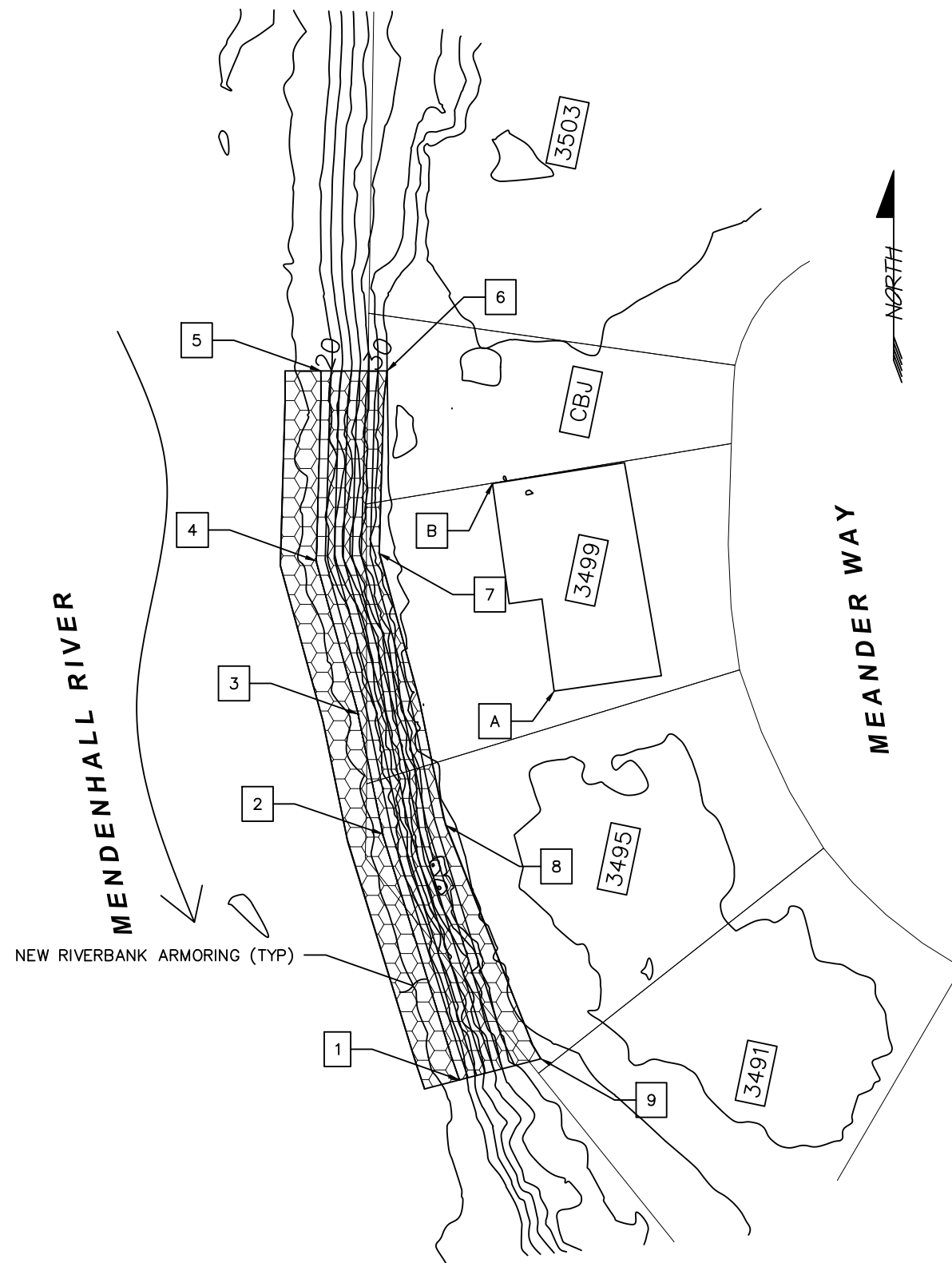
Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**N. MEANDER ARMORING
TYPICAL SECTION**

DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

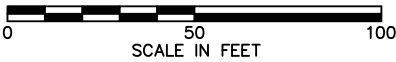
SHEET:
4 of **7**



- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 1540 CY
 - 5) RIPRAP VOLUME BELOW OHW: 770 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 7 CY

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2393896.5525	2507610.8681	18.0	Match TO EXISTING BANK
2	2393978.9938	2507585.2101	18.0	
3	2394019.0284	2507577.0045	18.0	
4	2394070.3146	2507562.9437	18.0	
5	2394133.9212	2507564.5190	18.0	MATCH TO EXISTING RIPRAP
6	2394133.9212	2507586.6734	32.0	MATCH TO EXISTING RIPRAP
7	2394072.8377	2507584.0270	32.0	
8	2393981.8148	2507606.2823	32.0	
9	2393903.6179	2507638.1839	32.0	MATCH TO EXISTING BANK
A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT – NW CNR HOUSE #3499

- NOTES:
- 1) THIS WORK WILL BE TO RECONSTRUCT AN EXISTING RIPRAP ARMORED BANK. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS ELEVATION 30.4. THIS HAS BEEN INTERPOLATED BETWEEN FEMA SECTIONS 'Q' AND 'R'
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions

Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

N. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
5 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

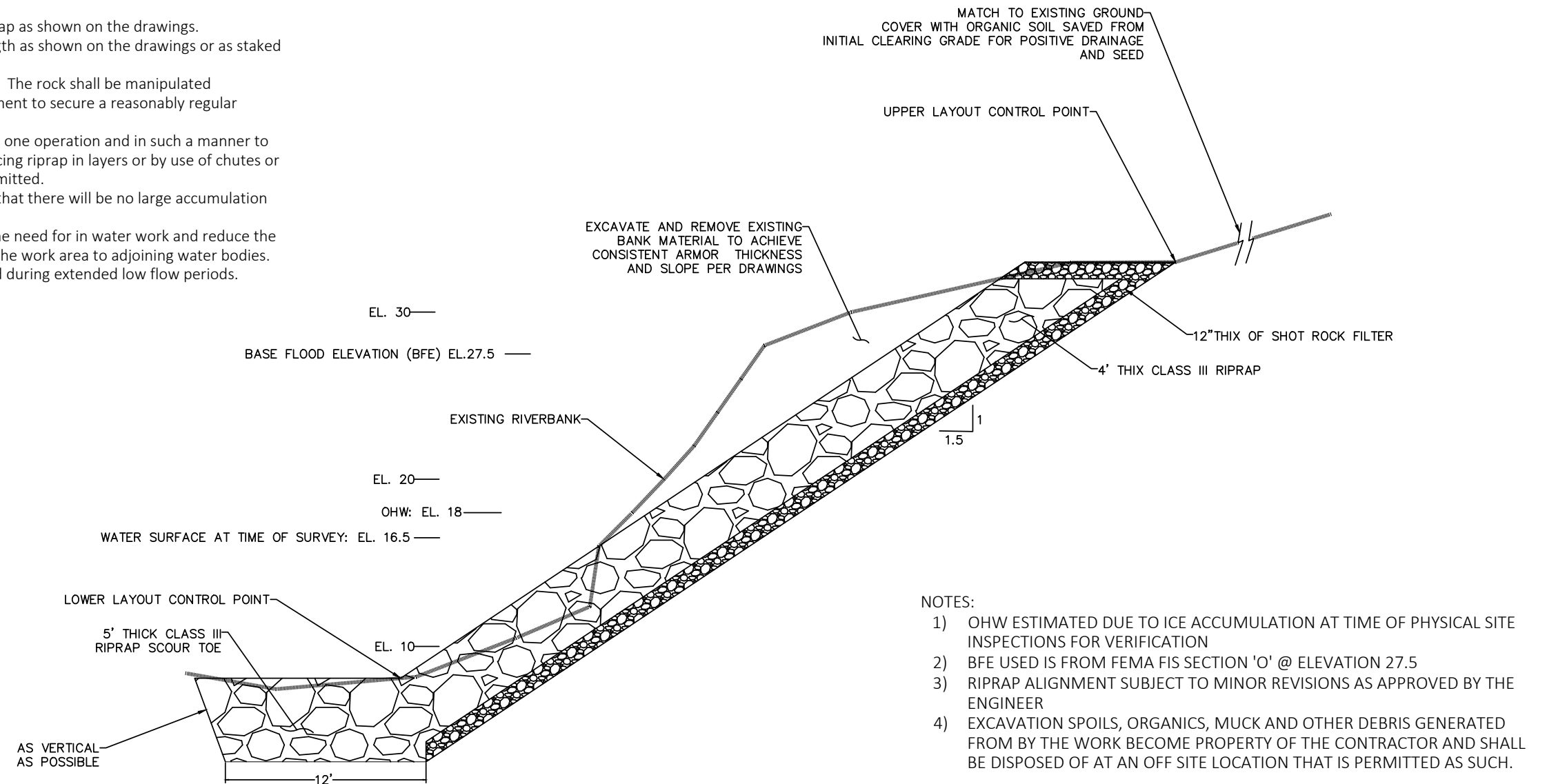
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**S. MEANDER ARMORING
TYPICAL SECTION**

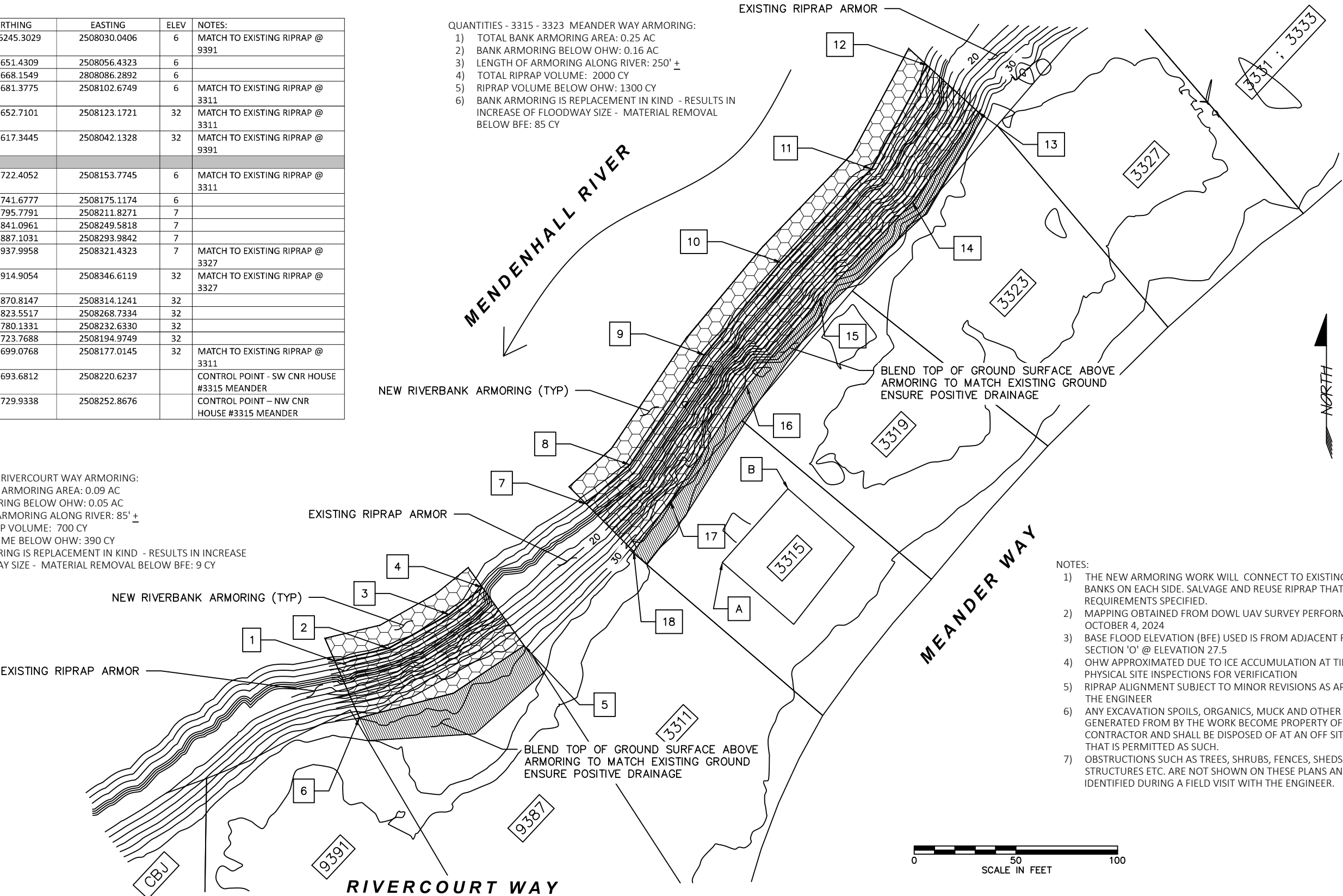
DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

SHEET:
6 of **7**

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

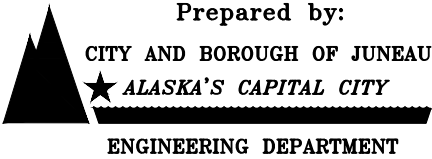
- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 85' ±
 - 4) TOTAL RIPRAP VOLUME: 700 CY
 - 5) RIPRAP VOLUME BELOW OHW: 390 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 2000 CY
 - 5) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.



2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of 7

Killewich - Typical Bank Erosion

Eroding Riverbank - 3843 and 3847 Killewich – October 2024



N. Meander - Failing Armoring and Bank Erosion

Remaining Bank armoring 3499,3495 Meander Way

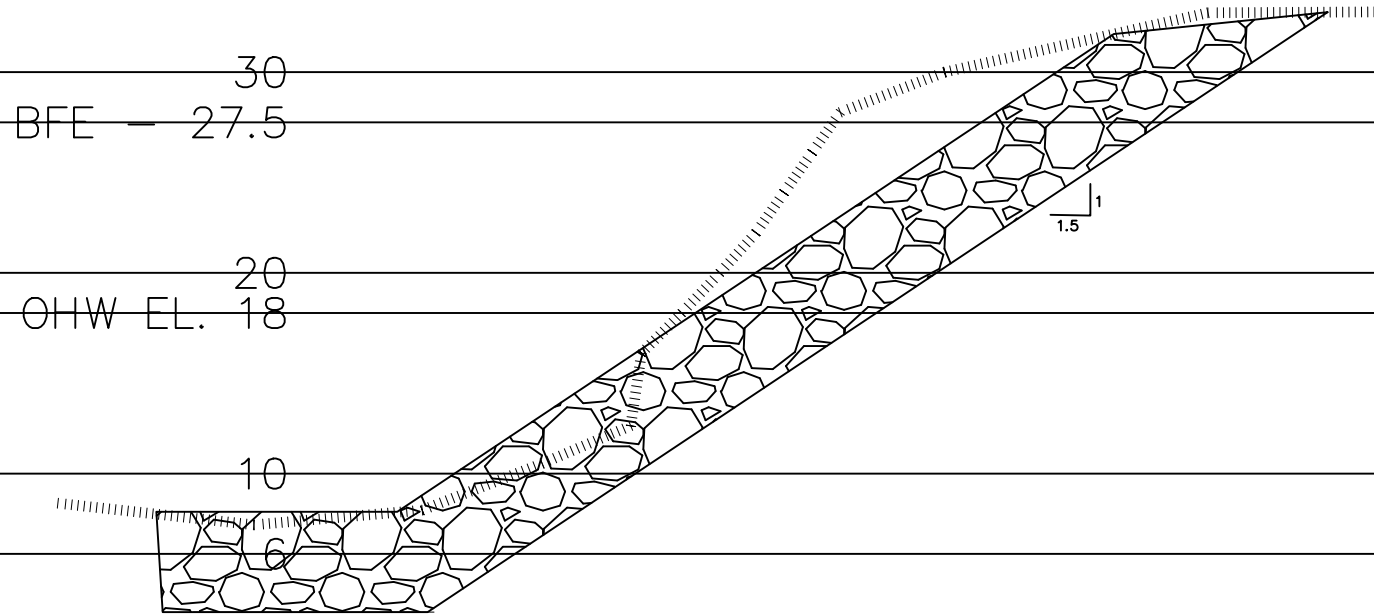


S. Meander - Typical Bank Erosion

Eroding Riverbank - 3323,19,15 Meander Way, October 2024



S. MEANDER ARMORING SECTIONS AND CALCULATIONS

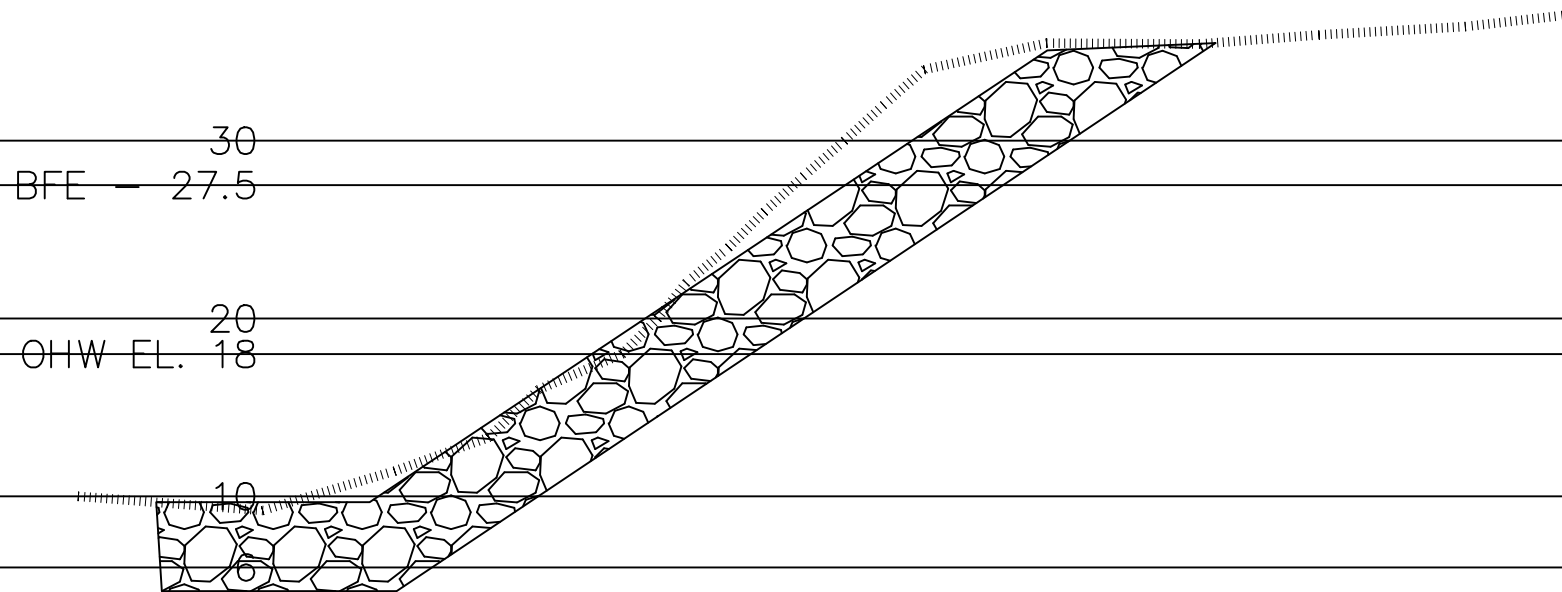


3315

CUT area below BFE: 39.9 s.f.

FILL area below BFE: 24.9 s.f.

NET area below BFE: CUT 15.0 s.f.

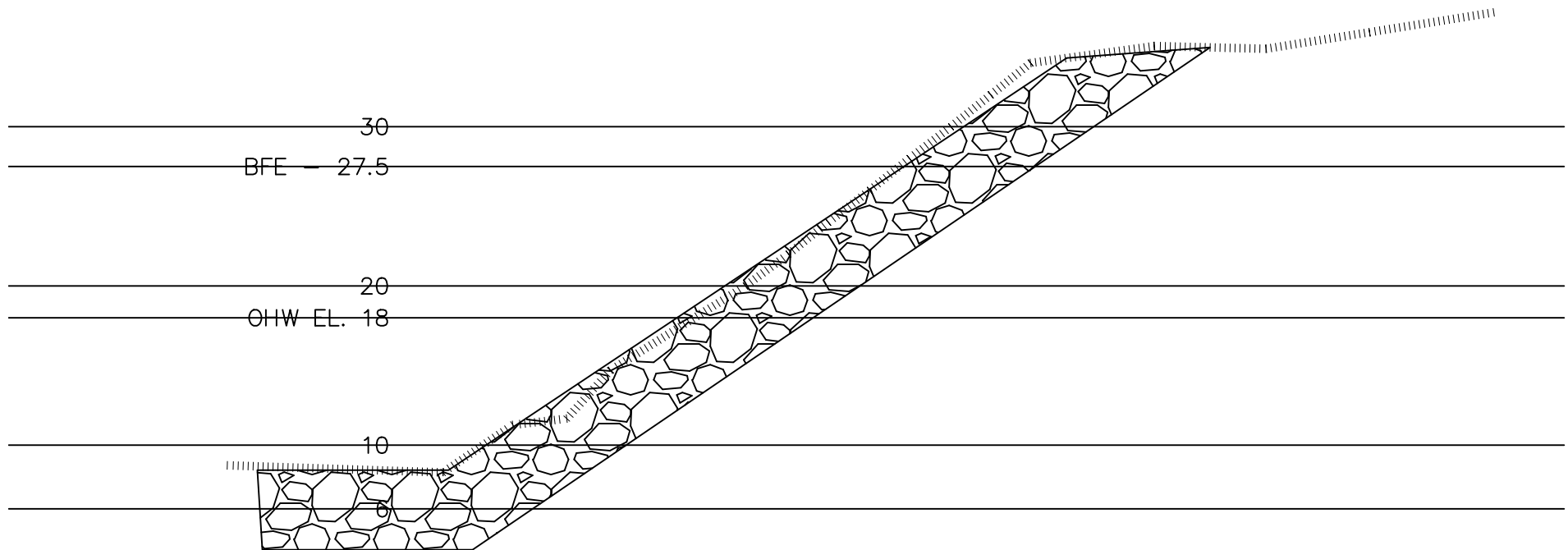


3319 U/S

CUT area below BFE: 15.5 s.f.

FILL area below BFE: 8.6 s.f.

NET area below BFE: CUT 6.9 s.f.



3323

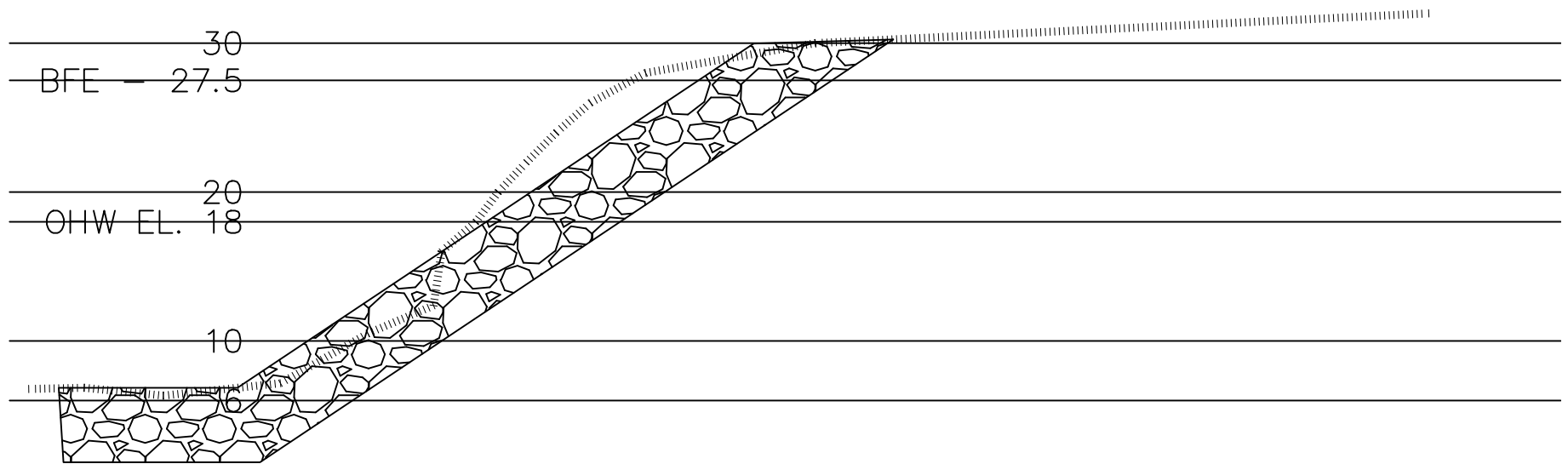
CUT area below BFE: 1.5 s.f.

FILL area below BFE: 14.3 s.f.

NET area below BFE: FILL 12.8 s.f.

Bank Armoring 3315 Meander to 3323 Meander/Way						
(+) = CUT (-) = FILL						
	l (ft)	start area	end area	average	volume (cf)	CY
0 to 3315	29	0	15	7.5	217.5	8.1
3315 to 3319 d	65	15	51.6	33.3	2164.5	80.2
3319d to u	58	51.6	6.9	29.25	1696.5	62.8
3319u to 3323	65	6.9	-12.8	-2.95	-191.8	-7.1
3323 to end	56	-12.8	0	-6.4	-358.4	-13.3
					3528.4	130.7
130.7 Cubic Yard Cut for 3315 to 3323 Armoring						

RIVERCOURT WAY (S. MEANDER) ARMORING SECTIONS AND CALCULATIONS



9387 D/S

CUT area below BFE: 33 s.f.

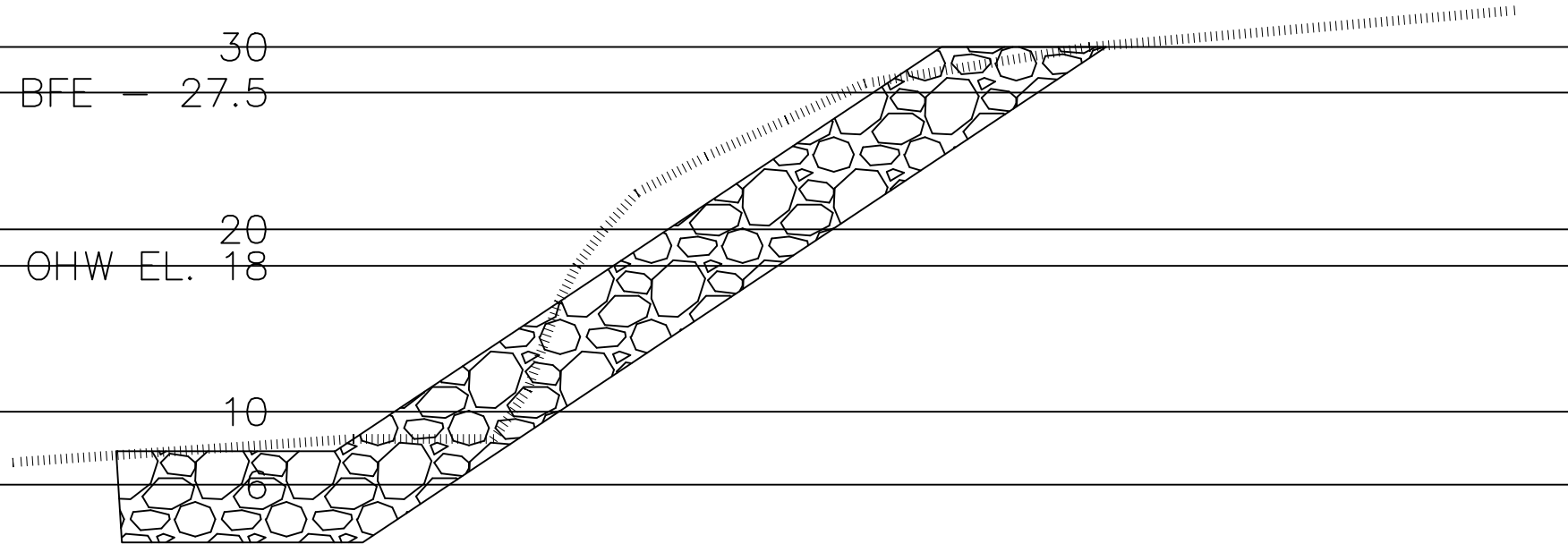
FILL area below BFE: 29.2 s.f.

NET area below BFE = CUT 4.2 s.f.

30
BFE — 27.5

20
OHW EL. 18

10



9387 U/S

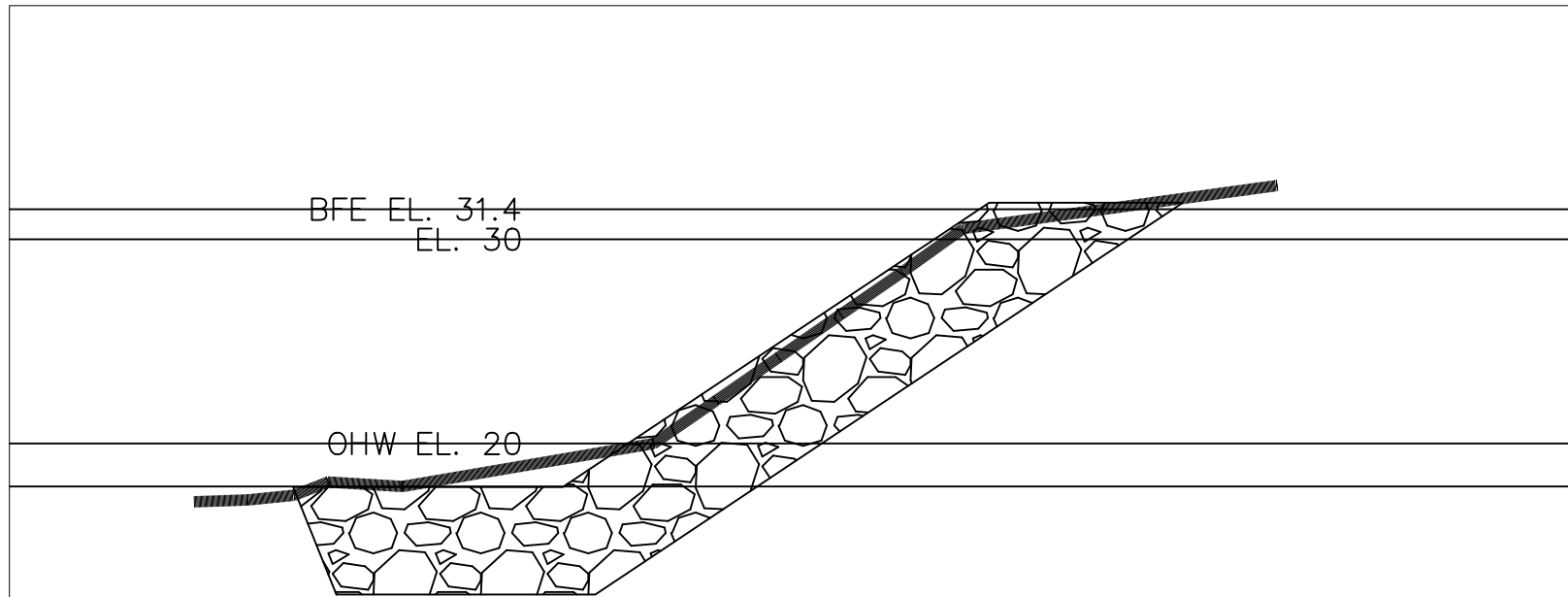
CUT area below BFE: 35.9 s.f.

FILL area below BFE: 32.6 s.f.

NETarea below BFE: CUT 3.3 s.f.

Bank Armoring 9387 Rivercourt Way (+) = CUT (-) = FILL						
	l (ft)	start area	end area	average	volume (cf)	CY
0 to 9387 D	30	0	4.2	2.1	63	2.3
9387 D to U	36	4.2	3.3	3.75	135	5.0
9387U to end	22	3.3	0	1.65	36.3	1.3
					234.3	8.7
8.7 Cubic Yard Cut for 9387 Armoring						

N. MEANDER ARMORING SECTIONS AND CALCULATIONS

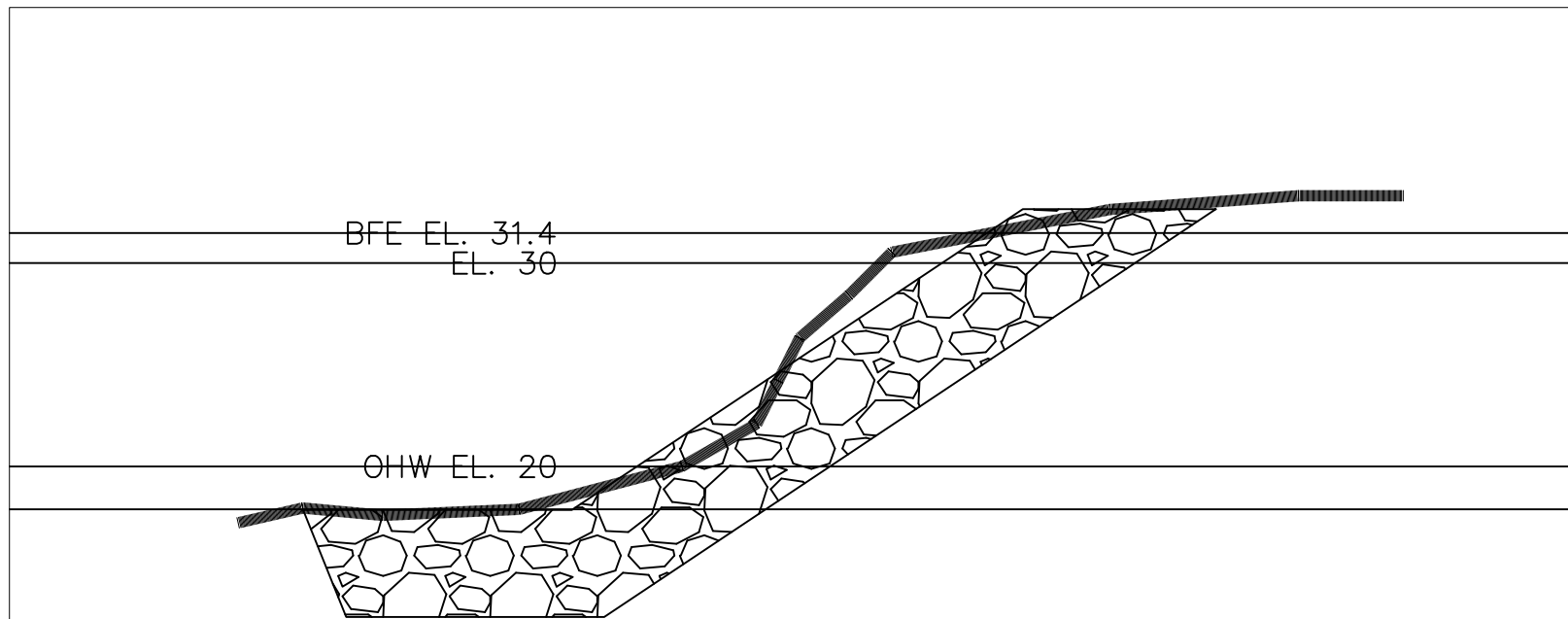


3495 Downstream

Cut area below BFE: 6.5 s.f.

Fill area below BFE: 9.9 s.f.

Net area below BFE: FILL 3.4 s.f.

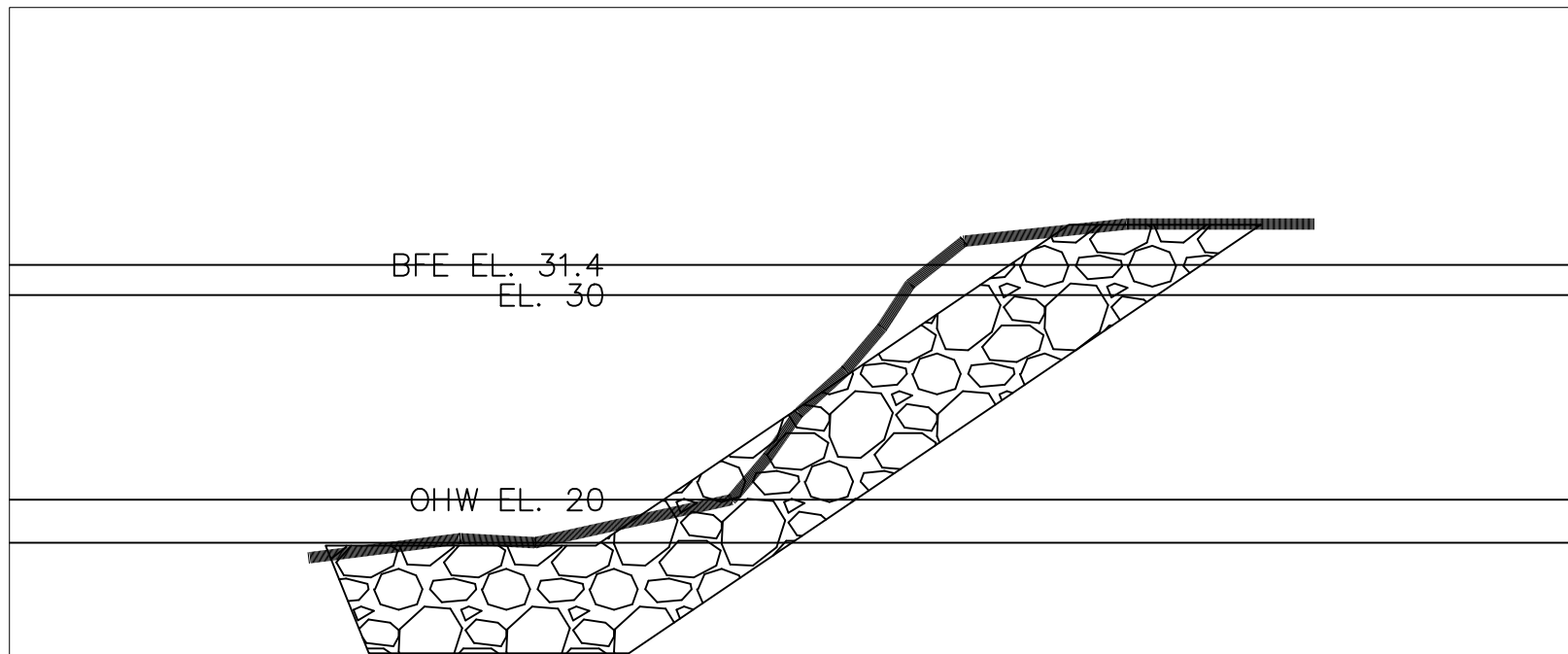


3495 Upstream

Cut area below BFE: 12.3 s.f.

Fill area below BFE: 9.0 s.f.

Net area below BFE: CUT +3.3 s.f.

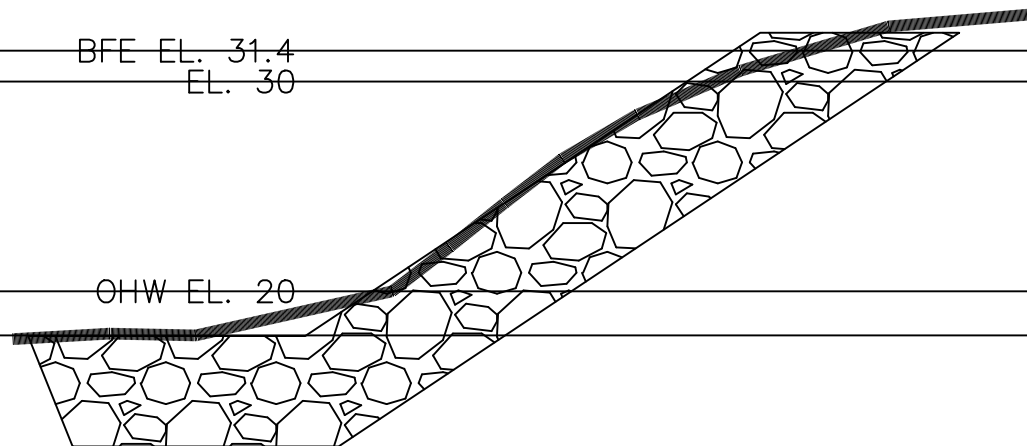


3499 Downstream

Cut area below BFE: 10 s.f.

Fill area below BFE: 9.0 s.f.

Net area below BFE: CUT 1.0 s.f.

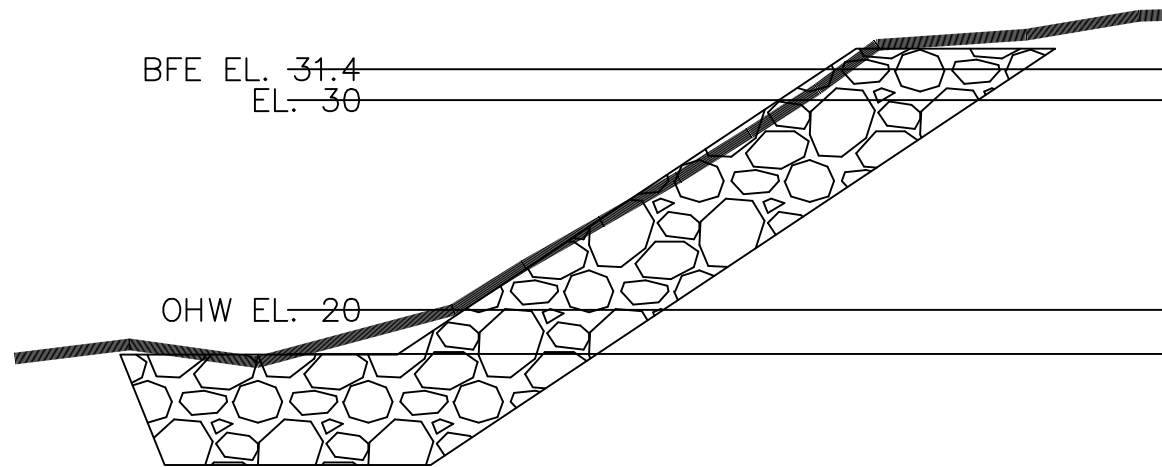


3499 Upstream

Cut area below BFE: 5.0 s.f.

Fill area below BFE: 4.4 s.f.

Net area below BFE: CUT 0.6 s.f.



CBJ - NHN

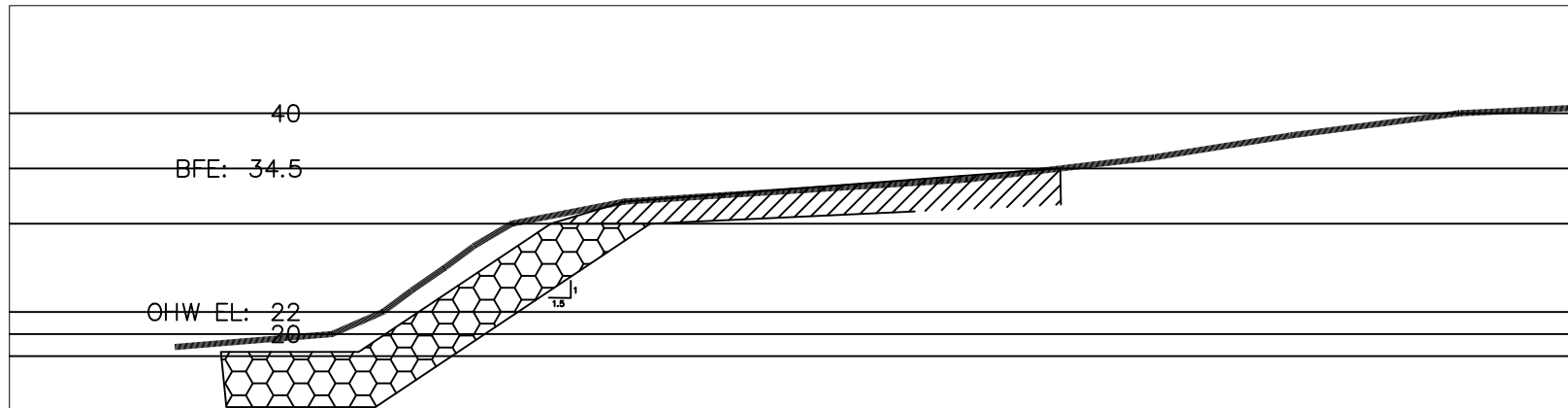
Cut area below BFE: 6.3 s.f.

Fill area below BFE: 4.9

Net area below BFE: CUT +1.4

Bank Armoring 3495 Meander to CBJ (nhn) MeanderWay						
(+)= CUT (-)= FILL						
	l	start area	end area	average	volume (cf)	CY
0 to 3495 D	10.4	0	-3.4	-1.7	-17.68	-0.7
3495 d to u	76	-3.4	3.3	-0.05	-3.8	-0.1
3495u to 3499d	41	3.3	1	2.15	88.15	3.3
3499d to u	52.8	1	0.6	0.8	42.24	1.6
3499u to CBJ	51.2	0.6	1.4	1	51.2	1.9
CBJ to End	10	1.4	0	0.7	7	0.3
					167.1	6.2
6.2 Cubic Yard Cut for N. Meander Armoring						

KILLEWICH ARMORING SECTIONS AND CALCULATIONS

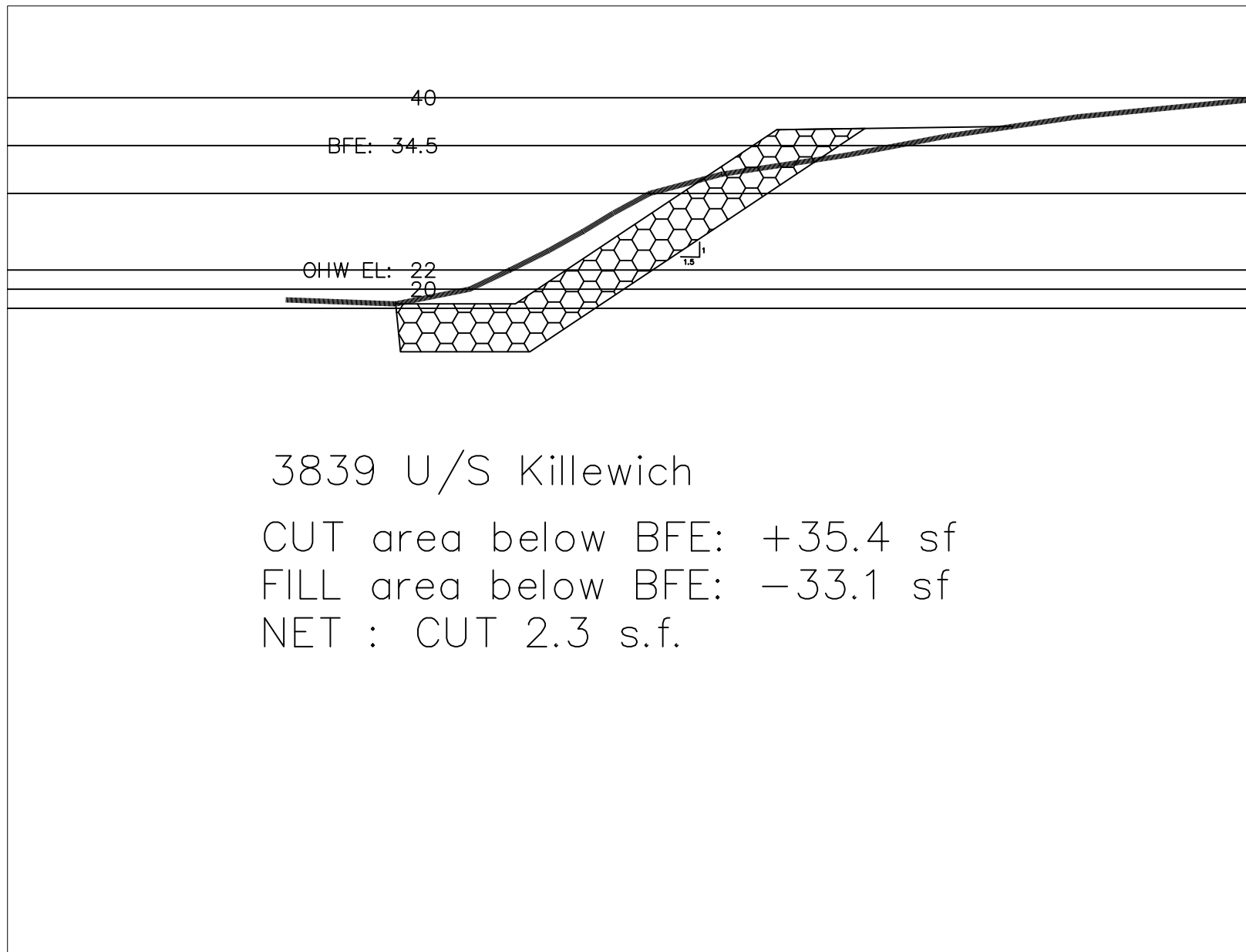


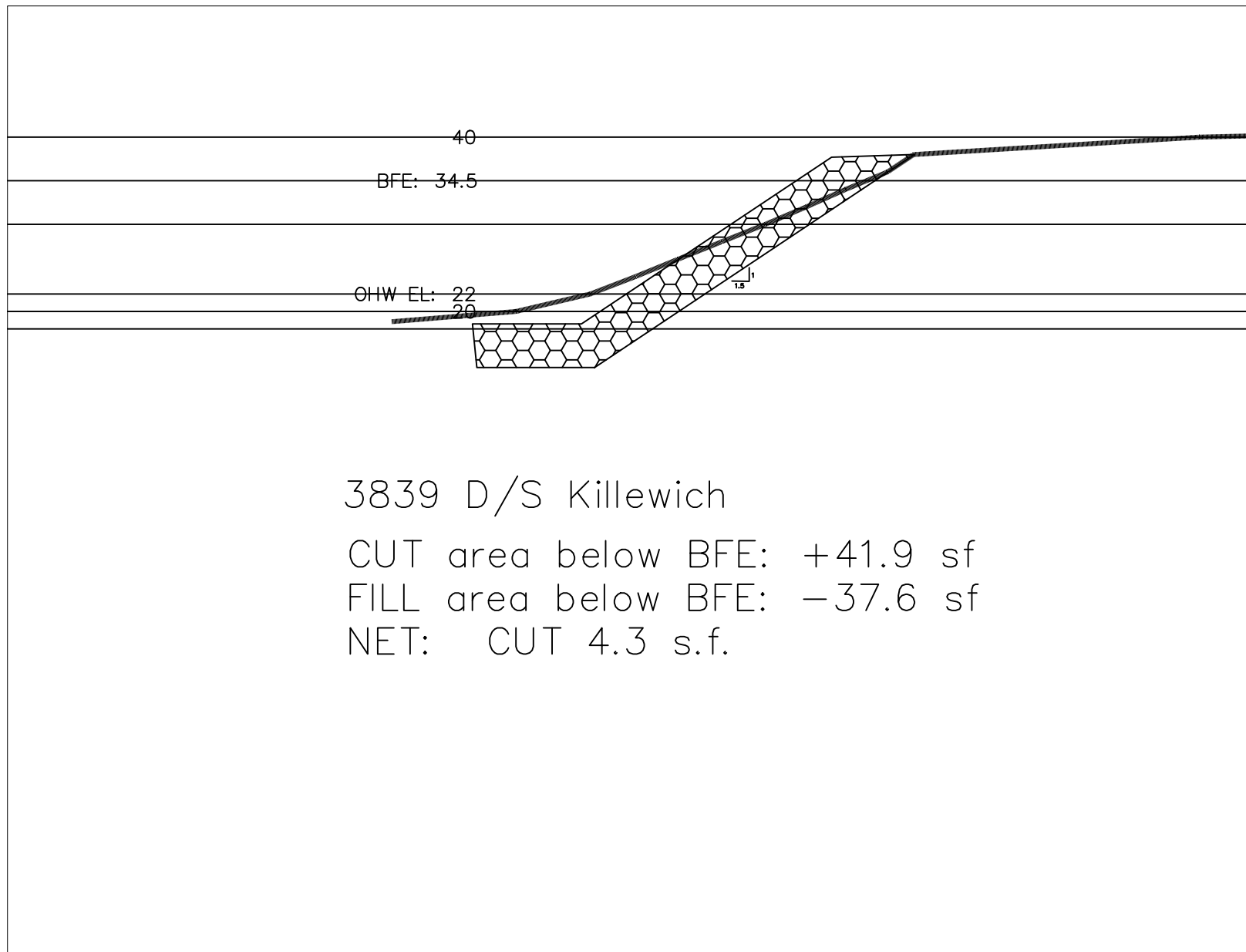
3835 Killewich

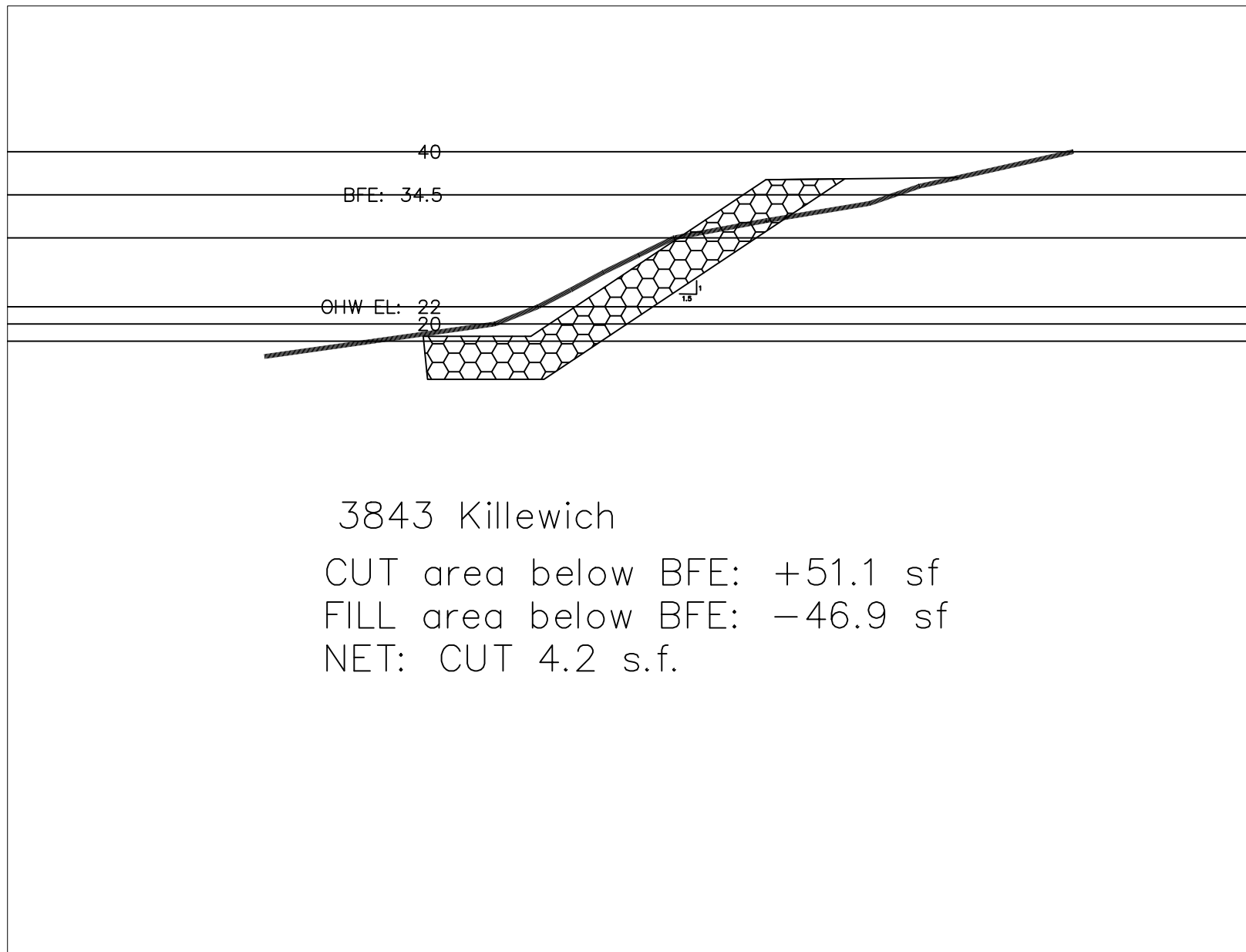
CUT area below BFE: +59.0 sf

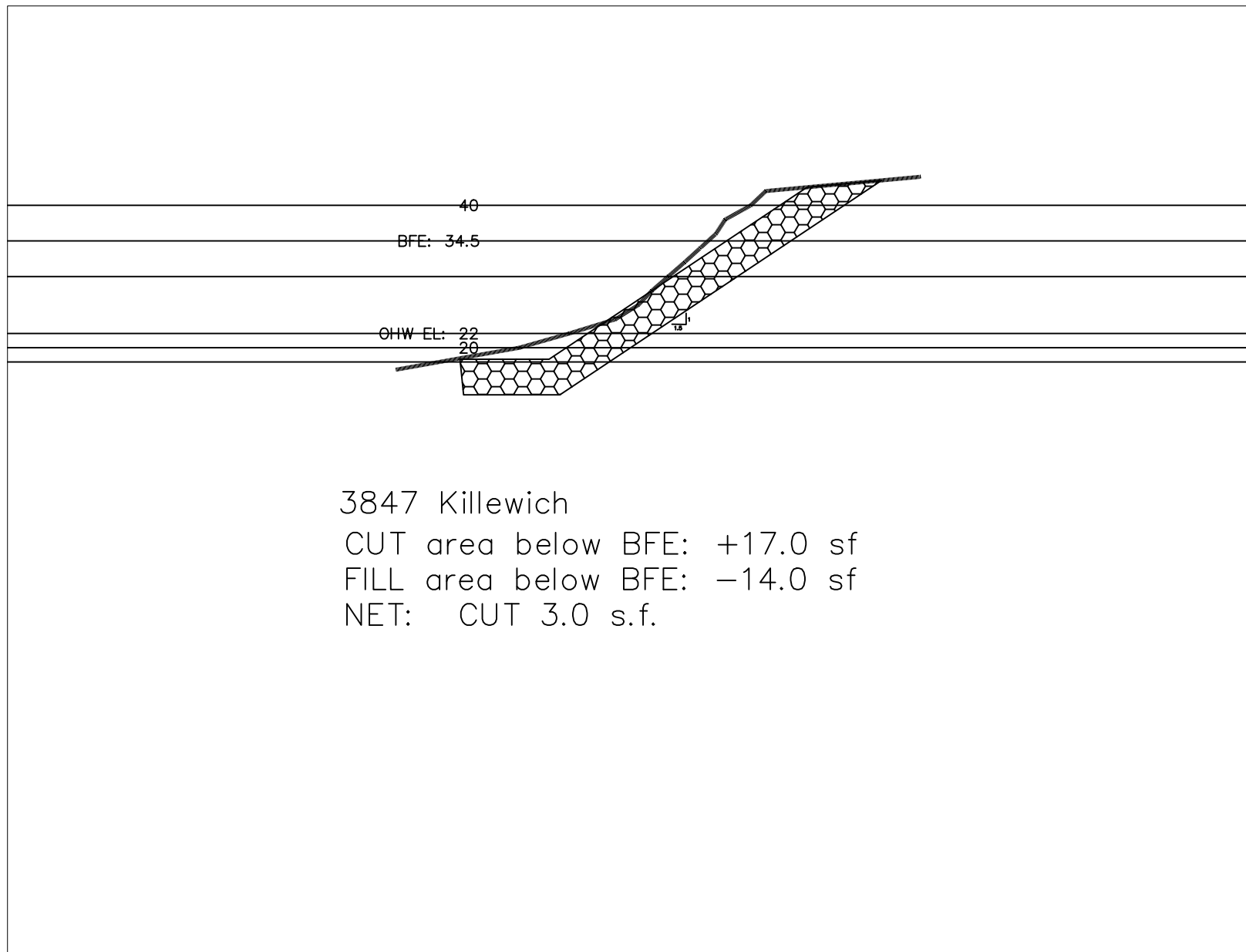
FILL area below BFE: -0.0 sf

NET: FILL 59 s.f.









Bank Armoring 3835 to 3847 Killewich						
(+) = CUT (-) = FILL						
	l	start area	end area	average	volume (cf)	CY
beginning to 3847	61	0	3	1.5	91.5	3.4
3847 to 3843	105	3	4.2	3.6	378	14.0
3843 to 3839 d/s	103	4.2	4.3	4.25	437.75	16.2
3839 d/s to u/s	50	4.3	2.3	3.3	165	6.1
3839 u/s to 3835	137	2.3	59	30.65	4199.05	155.5
3835 to end	45	59	0	29.5	1327.5	49.2
					6598.8	244.4
244 Cubic Yard Cut for Killewich Armoring						

Mendenhall River Preliminary 2D Surface Water Model Report

(204367-MBI-HH-RPT-001)



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June 06, 2025

Revision History

REV	DATE	COMMENTS	MICHAEL BAKER APPROVAL	CLIENT APPROVAL
A	Feb 28, 2025	Draft	Garrett Yager	
B	Apr 25, 2025	Revise with USGS updates	Garrett Yager	
0	June 06, 2025	Final	Garrett Yager	

EXECUTIVE SUMMARY

This report documents the hydrologic and hydraulic analysis of the Mendenhall River Valley, Juneau, AK, in response to recent Suicide Basin Glacial Lake Outburst Flood (GLOF) events. This study was conducted to support the City and Borough of Juneau and other stakeholder agencies in evaluating current and future potential flood risk within a compressed schedule. To that end, a two-dimensional surface water model was developed using best available data. The surface water model was used to simulate a range of GLOF release events on the Mendenhall River. Hydrographs representing temporarily varied discharge from Suicide Basin, provided by the National Weather Service (NWS), were combined with U.S Geological Survey (USGS) flood frequency estimates to establish a suite of flood event scenarios.

Flood events were simulated to yield whole foot flood stage at the Mendenhall River streamgage near Auke Bay in Mendenhall Lake, managed by the USGS (Gage 15052500) and referenced by NWS (Gauge MNDA2) to provide real-time flood forecasting via the National Water Prediction Service. Inundation maps and depth grids whole foot stage discharge were developed from simulated flood events with the intent of updating current NWS flood forecasting maps.

The surface water model was also used to simulate HESCO barriers along the left (east) bank of the Mendenhall River, from Fireweed Lane to River Court Way. The HESCO barriers are intended to act as a temporary levee that will prevent floodwater from inundating the adjacent community. Simulation results were evaluated to assess the efficacy of HESCO barriers in prohibiting community flooding and possible impacts to previously unaffected community members. Small refinements to the HESCO barrier alignment were made to optimize layout based on model results. Breaches, or failures, in the HESCO barriers were not simulated as part of this study. As simulated, the proposed HESCO barriers prove highly effective in isolating the eastern floodplain from overbank flooding with very little impact to adjacent structures and property. Localized increases in water surface elevation occur within the Mendenhall River and western floodplain. Flooding extents increase most significantly in the undeveloped floodplain, with small increases near existing structures that are likely to be inundated by flooding in the absence of the barrier.

This model is considered preliminary. The model was calibrated to the 2024 GLOF event using high water survey and anecdotal data. The maximum simulated water surface had respective median and mean errors of 0.02 and -0.01 feet, and a standard error of 0.10 feet relative to high water survey. Incorporating supplemental survey and model updates will increase simulation accuracy and certainty.

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Acronyms and Abbreviations

1D	One-Dimensional
2D	Two-Dimensional
AC-FT	Acre-Feet
ADF&G	Alaska Department of Fish and Game
AEP	Annual Exceedance Probability
AKDOT&PF	Alaska Department of Transportation and Public Facilities
ASP	Alaska State Plane
BLE	Base Level Engineering
BN	Bridge Number
CBJ	City and Borough of Juneau, Alaska
CFS	Cubic Feet Per Second
DEM	Digital Elevation Model
DTM	Digital Terrain Model
DGGS	State of Alaska Division of Geological and Geophysical Surveys
FEMA	Federal Emergency Management Agency
FT	Feet
GLOF	Glacial Lake Outburst Flood
H&H	Hydrology and Hydraulics
HEC-RAS	Hydrologic Engineering Center's River Analysis System
LiDAR	Light Detection and Ranging
Michael Baker	Michael Baker International, Inc.
MHHW	Mean Higher-High Water
MLLW	Mean Lower-Low Water
NAD83	North American vertical Datum of 1983
NLCD	National Land Cover Dataset
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service (NOAA)
SfM	Structure from Motion
USACE	U.S. Army Corps of Engineers
UAS	University of Alaska Southeast
UAV	Unmanned Aerial Vehicle
USGS	U.S. Geological Survey
WGS84	World Geographic System 1984
WSE	Water Surface Elevation

1.0 Introduction

The Mendenhall River Valley (the Valley) is the most populated area within the City and Borough of Juneau (CBJ), Alaska. Located approximately 10 miles northwest of Downtown Juneau, it is surrounded by the Tongass National Forest. Within the Valley watershed lies the Mendenhall Glacier, Mendenhall Lake, and Mendenhall River.

Suicide Basin is a side basin of the Mendenhall Glacier located approximately one mile from the Mendenhall Glacier terminus. As Suicide Glacier retreated, the exposed terminus began filling with annual snowmelt, ice melt, and rainfall runoff. Being dammed by the Mendenhall Glacier, the calving face holds back water and sheds icebergs into the lake. In 2009 the first glacial lake outburst flood (GLOF) was recorded, with subsequent GLOFs occurring almost annually. The 2014 GLOF resulted in a peak discharge of 19,900 cubic feet per second (cfs), exceeding the Federal Emergency Management Agency (FEMA) estimated 100-year peak flow of the Mendenhall River of 17,100 cfs. The 100-year discharge, as reported in the 2020 flood insurance study (FEMA 2020), was calculated based on 34 years of historic flood data reported at the USGS-maintained streamgage station (15052500) located in Mendenhall Lake. The data used preceded historic GLOFs.

To provide a better understanding of flood risk within the Valley, the National Weather Service (NWS) completed a flood inundation study of the Mendenhall River (NWS 2016), from which flood inundation maps were developed and made accessible via the web (NWS 2025a). Inundation maps and much of the historical hydrologic data reference the Mendenhall River streamgage (gage) managed by the U.S. Geological Survey (USGS), identified as Gage 15052500, and referenced by NWS as Gage MNDA2.

During August of 2023 and 2024, Suicide Basin GLOFs resulted in subsequently historic peak flooding in the Valley, yielding respective peak discharges of 34,200 cfs and 42,700 cfs, and historic crests of 14.97 feet and 15.99 feet at the Mendenhall River gage. These events resulted in significant erosion and flooding of homes and property. The 2024 GLOF produced a historic crest elevation equivalent to the maximum stage (16 feet) currently mapped by NWS. Both events also resulted in significant morphological changes to the Mendenhall River, influencing flood hydraulics and associated flood inundation.

There is a growing concern that significant flooding equivalent to or greater than the 2024 GLOF will become an annual, or more frequent, occurrence. The affected flood area includes a high number of residential homes as well as critical infrastructure such vehicle roadways, schools and other developed facilities. A better understanding of future potential flooding and how flood waters interacted with the channel and surrounding topography is needed to better inform the community of potential risk and support short- and/or long-term solutions to minimize and prevent flood risk.

1.1 Purpose of Study

The purpose of this study was to develop a preliminary, base level engineering (BLE) two-dimensional (2D) surface water model that can be leveraged to update NWS flood inundation maps and evaluate efficacy of temporary flood fighting and mitigation measures. This study will support multi-agency collaborative action to further document, assess, and mitigate flood risk to community residents, businesses, and critical infrastructure in the Mendenhall River Valley. Given the increasing magnitude and frequency of GLOFs in the Valley, as well as significant changes to the Mendenhall River channel, CBJ plans to position

flood barriers along the east (left) bank of the Mendenhall River as an immediate, short-term countermeasure to future flooding.

1.2 Project Location

The CBJ governs an area of over 2,700 square miles, hosting a population of 32,100 residents (2022 census). It is bordered to the east by British Columbia, Canada, to the north and northwest by Haines Borough, and to the south and southwest by the unincorporated Tongass National Forest. Juneau International Airport is located at the southern extents of the Mendenhall Valley, located northwest of downtown Juneau. The project location covers the Mendenhall Valley, from Mendenhall Lake to the Gastineau Channel (Figure 1-1). The modeled study reach covers the Mendenhall River, from Mendenhall Lake to the Gastineau Channel.



Figure 1-1 Project Location Map

1.3 Overview of Approach

Project scope includes a hydrologic and hydraulic (H&H) analysis of the Mendenhall River Valley to tidewater in relation to Suicide Basin GLOFs, to be performed under a compressed schedule. The H&H analysis was based on best available data collected through multi-agency collaboration and close coordination with CBJ (Michael Baker 2024). To address project needs in the allotted time, a two-dimensional (2D) surface water model was developed using recent, best available topographic data calibrated to the 2024 flood event. Once a reasonably representative hydraulic model was developed for current conditions, predicted flood events were simulated to develop new inundation maps for each incremental whole foot stage elevation at the Mendenhall River gage.

The calibrated model was also used to simulate the proposed Phase 1 HESCO (HESCO) barrier positioned along the left (east) bank of the Mendenhall River, approximately from Fireweed Lane to River Court Way. Simulations with the HESCO in place are intended to assess the efficacy of HESCO barriers in prohibiting community flooding and possible impacts to previously unaffected community members.

2.0 Hydrology

2.1 Watershed Description

The Mendenhall River watershed covers an area of approximately 103 square miles, extending from 7,000 feet elevation in the Tongass National Forest to sea level at the coastal Gastineau Channel. A significant portion of the watershed is covered in glaciers, with much of the lower undeveloped watershed being covered by muskeg and spruce forest. The mountainous terrain and glaciers result in highly variable temperatures and precipitation across the watershed.

The Mendenhall River begins at the receding terminus of the Mendenhall Glacier at the north end of the valley. Mendenhall River drains into Mendenhall Lake, a large glacial moraine lake, which also receives flow from Nugget Creek, Steep Creek, and several small tributaries. Mendenhall River exits the lake near View Drive and flows southward through the valley before draining into the Gastineau Channel and Fritz Cove. Approximately 0.8 miles upstream of Egan Drive (Glacier Highway), Montana Creek enters Mendenhall River from the west.

The Mendenhall Valley is rising relative to sea level. This uplift is a result for both tectonic activity and glacial rebound. As the Valley rises the channel cuts (incises) into the surrounding terrain, reducing and in some cases abandoning adjacent floodplains (Neal and Host 1999) during equivalent flood events. However, this incision has only minimized the potential extent of historic flooding experienced during recent GLOFs.

2.2 Nature of Flood Risk and Historic Flooding

Mean annual precipitation is approximately 50 inches, which includes approximately 86 inches of snow, at Juneau Airport. Mean annual precipitation at the head (top) of the Mendenhall Glacier is estimated to be greater than 20 inches. Maximum annual precipitation typically occurs in the fall months, with increased occurrence and magnitude of regional storms and glacial runoff. Flooding associated with seasonal rainfall runoff and minor GLOF events is generally contained within the banks of the Mendenhall River study reach.

Between 2009 and 2014, the Mendenhall River received floodwater from Suicide Basin GLOFs one to two times per year (NWS 2016). Since then, the NWS has documented one to ten (2015) annual glacial dammed lake releases from Suicide Basin (NWS 2025b). A plot of historic peak annual events (USGS 2025a) and reported GLOF events (NWS 2025b) is shown in Figure 2-1. Not all of the events resulted in flooding, though eight of the last 16 peak annual events were a result of GLOFs, with five of them yielding the top five peak annual events in the 59 year gage record. Recent 2023 and 2024 peak GLOF events yielded the top two historic flood events (Figure 2-2). The 2023 event release was approximately 58% greater discharge than the historic maximum rainfall runoff event, and nearly 48% greater than FEMA's effective 100-year discharge. The 2024 event released 35% greater discharge than the 2023 event, 113% greater discharge than the historic maximum rainfall runoff event, and nearly double (98% greater) FEMA's effective 100-year discharge.

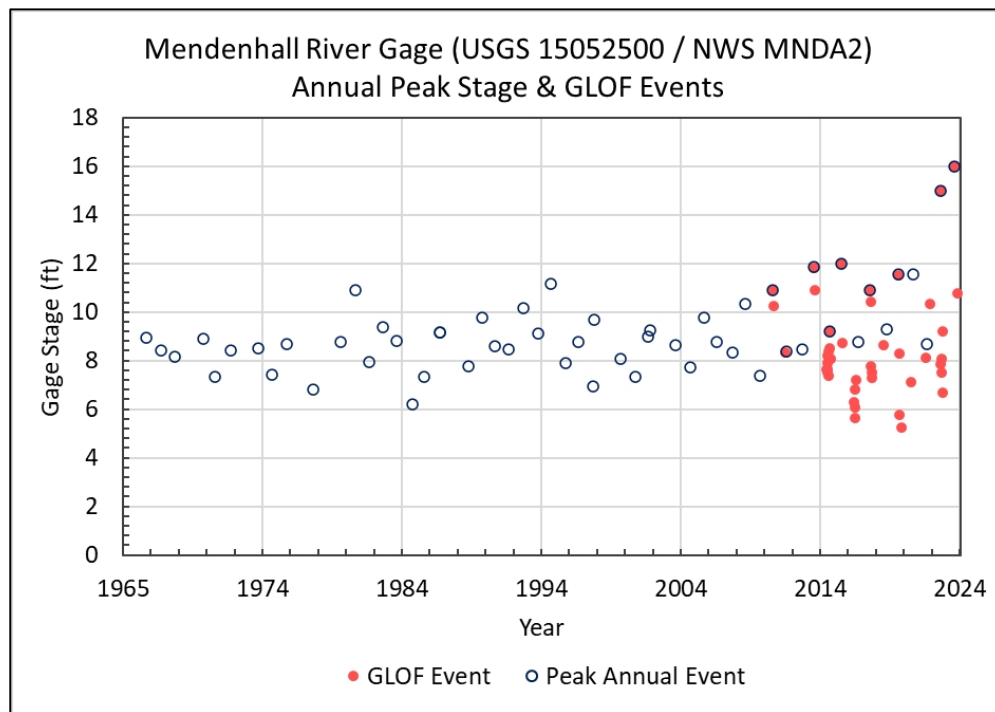


Figure 2-1 Peak annual stage and GLOF event records at the Mendenhall River gage

Prior to installation of the Mendenhall River gage, a large flood occurred in the late summer of 1961, having an estimated peak discharge of 27,000 cfs (Barnwell and Boning 1968). This event was associated with significant reported rainfall, with five inches recorded over a three day period in August. However, the one and three day rainfall recurrence intervals were roughly 2 and 10 years, respectively. This suggests that the 1961 flood may very well have been the result of a GLOF.

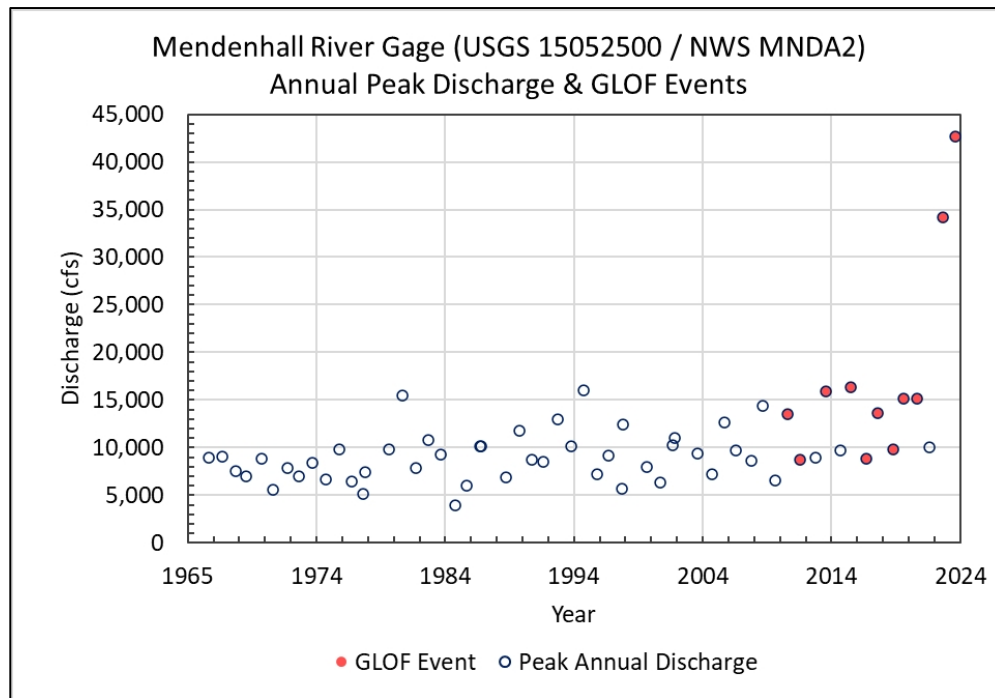


Figure 2-2 Peak annual discharge and GLOF event records at the Mendenhall River gage

Recent 2023 and 2024 GLOFs caused significant flooding upstream of Back Loop Road, impacting both residents and U.S. Forest Service (USFS) facilities, and in the heavily developed eastern floodplain downstream of Back Loop Road. The extent and magnitude of flooding has been well documented by CBJ, USGS, NWS, USACE, and University of Alaska Southeast (UAS) (Michael Baker 2024; NWS 2023, 2024, 2025c). These events also resulted in significant bank erosion, to which several residential buildings were lost. Bridge inspections performed by Alaska Department of Transportation & Public Facilities (ADOT&PF) also revealed substantial channel bed erosion at Back Loop Bridge and the Pedestrian Bridge downstream of the Montana Creek confluence; as much as 6 feet during the 2024 GLOF.

Significant sequential increases in annual flood magnitude associated with GLOF events, and the uncertainty of future events, warrants immediate concern and action by all local stakeholders.

2.3 Study Hydrology

The 2D surface water model relies on manually assigned boundary conditions representing riverine hydrology and downstream control. Inflow hydrology (discharge) for the Mendenhall River and Montana Creek were modeled. The downstream control represents tidewater in the Gastineau Channel and Fritz Cove to which the Mendenhall River drains.

2.3.1 Mendenhall River

Mendenhall River discharge was modeled as an unsteady hydrograph representing the GLOF release volume on top of a constant baseflow that the river may be experiencing prior to and following the GLOF.

Inflow hydrographs were developed using nested Suicide Basin GLOF hydrographs provided by NWS (2025d) and station-based flood frequency estimates published by USGS (Curran 2025).

The NWS-provided GLOF hydrographs were derived using a scaled average of the 2023 and 2024 GLOF hydrographs recorded at the Mendenhall River gage, normalized to a consistent time interval (15 minutes) and removal of baseflow. The average discharge was then computed in cumulative and hourly volumes. Scaling was performed by adjusting the total Suicide Basin release volume in 5,000 acre-feet (ac-ft) increments and distributing the relative runoff volume across the hourly timestep to yield a range of hourly hydrographs representing release volumes from 5,000 to 70,000 ac-ft.

Each of the nested GLOF hydrographs had an additional constant baseflow added to the incremental discharge value equal to the 50% annual exceedance probability (AEP), or 2-year recurrence interval, event. Subsequent baseflow events were then assigned to the 70,000 ac-ft hydrograph to steadily increase baseflow and total peak discharge. Modeled baseflows included the 50, 10, 4, 2, 1, and 0.5% AEP events. These coincide with the 2-, 10-, 25-, 50-, 100-, and 200-year flood recurrence intervals. This approach provided increased peak discharge using probable riverine hydrology without extrapolating GLOF release hydrographs beyond those established by NSW.

The peak discharge of each combined Mendenhall River inflow hydrograph was then compared against the USGS Mendenhall River gage rating curve (USGS 2025b) to identify the associated stage and respective whole foot event for inundation mapping. Only the 70,000 ac-ft GLOF and 4% AEP baseflow produced a combined peak discharge equivalent to a whole foot stage (18FT). Supplemental GLOF hydrographs were developed, while maintaining baseflow, to yield peak discharges associated with whole foot stage elevations from 9 to 20 feet, as requested by CBJ. This required expanding the range of GLOF release volumes and NWS-provided hydrographs, from 1,850 ac-ft to 100,500 ac-ft. It also required extrapolating the USGS rating curve from its upper limit of 18.92 feet to 20 feet. To achieve the 8-foot (8FT) stage, a constant baseflow less than the 50% AEP was modeled. The resulting Mendenhall River inflow hydrographs are plotted in Figure 2-3. Contributing and combined peak discharges for each event are tabulated in Table 2-1. Each event is identified by the associated.

For the 2024 calibration, the discharge hydrograph reported at the Mendenhall River gage (USGS 2025a) was modeled as inflow to the Mendenhall River. Similar data was used for the 2023 event used for model validation.

2.3.2 Montana Creek

Discharge modeled on Montana Creek is intended to serve as a probable contributing flow during a GLOF event, that increases downstream flow on the Mendenhall River and reduces flood storage capacity within the coincident Montana Creek and Mendenhall River floodplain. There is little certainty as to the magnitude or timing of peak discharge on Montana Creek during the GLOF. As such, a steady discharge equivalent to 10% of the Mendenhall River baseflow was applied. This approach is consistent with that used in the 2015 Mendenhall River Inundation Study (NWS 2016). Event-specific discharges are presented in Table 2-1.

For the 2024 and 2023 events, NWS provided the historic gage record on Montana Creek. The record was used to calculate an average flow which varied little during and between events; 105 cfs (2024) and 100 cfs (2023).

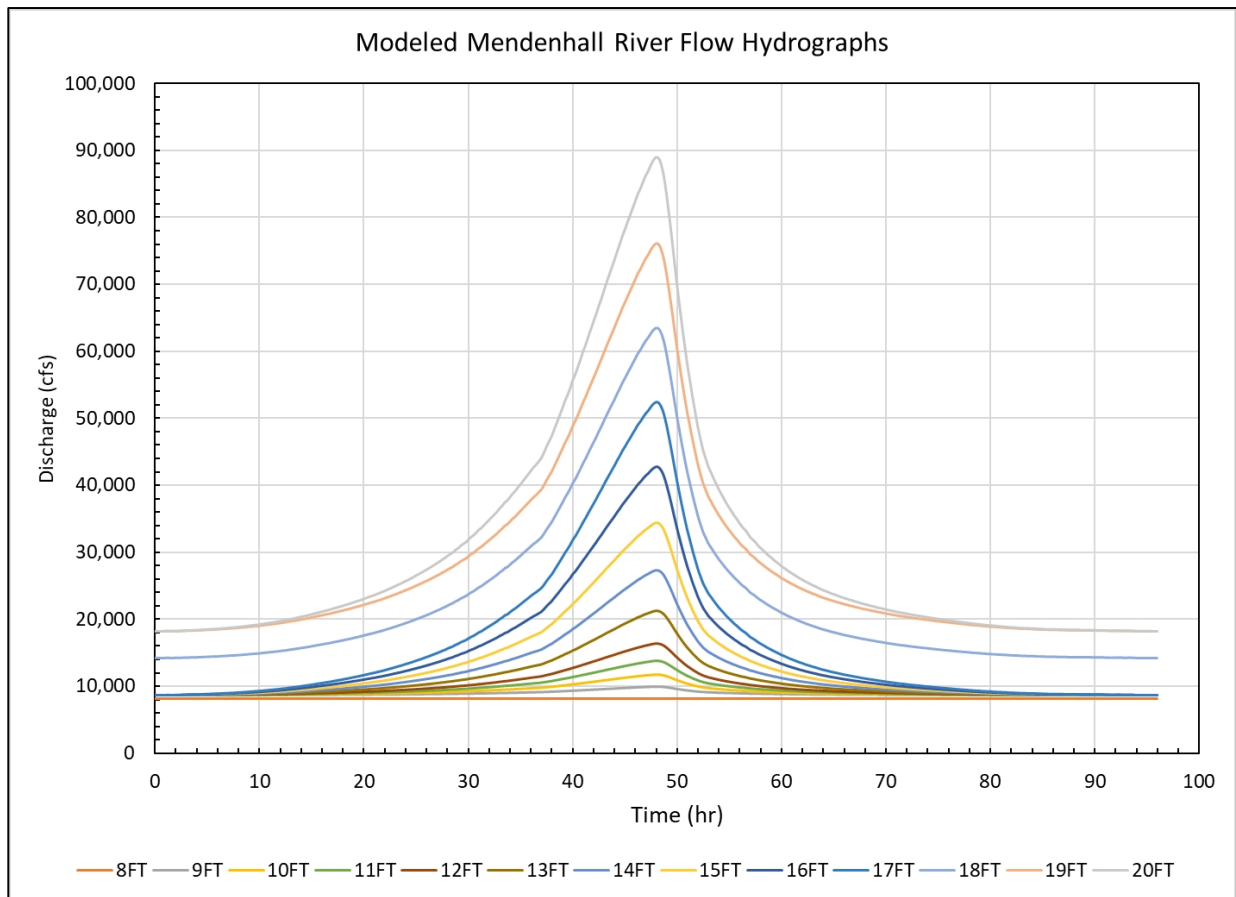


Figure 2-3 Modeled Mendenhall River Inflow Hydrographs for Inundation Events

Table 2-1 Inundation Event Hydrology

EVENT ¹	PEAK DISCHARGE (CFS)		GLOF Maximum Volume (AC-FT)	GLOF Peak Discharge (CFS)	Mendenhall Baseflow Discharge (CFS)	Mendenhall Baseflow AEP
	Mendenhall River ²	Montana Creek ³				
8FT	8,080	808	0	0	8,080	< 50%
9FT	9,923	862	1,850 ⁵	1,303	8,620	50%
10FT	11,706	862	4,380 ⁵	3,086	8,620	50%
11FT	13,798	862	7,350	5,178	8,620	50%
12FT	16,405	862	11,050	7,785	8,620	50%
13FT	21,301	862	18,000	12,681	8,620	50%
14FT	27,289	862	26,000	18,669	8,620	50%
15FT	34,404	862	36,600	25,784	8,620	50%
16FT	42,788	862	48,500	34,168	8,620	50%
17FT	52,369	862	62,100	43,749	8,620	50%
18FT	63,515	1,420	70,000	49,315	14,200	4%
19FT	76,039 ⁴	1,820	82,100 ⁵	57,839	18,200	0.5%
20FT	89,002 ⁴	1,820	100,500 ⁵	70,802	18,200	0.5%
Notes: 1. Modeled event name signifies the whole foot stage associated with peak discharge at USGS Gage 15052500 per 2025 rating curve (USGS 2025a). 2. Mendenhall River peak flow is a combination of GLOF peak discharge and baseflow. 3. Montana Creek flows applied as constant discharge equal to 10% of Mendenhall River baseflow. 4. USGS rating curve extrapolated beyond the 18.92 ft upper limit to establish a peak discharge. 5. GLOF hydrographs developed beyond the NWS-derived limits to achieve whole foot stage.						

2.3.3 Tidewater Control

Downstream control was established as a known water surface elevation. For all predicted events a constant elevation of 20 feet (Mean Lower-Low Water, MLLW) was used. This is a conservative estimate, being approximately 3.7 feet above Mean Higher-High Water(MHHW) and held constant over the entire event. This approach is consistent with that used in the FEMA effective model (FEMA 2020) and the 2015 Mendenhall River Inundation Study (NWS 2016).

For the 2024 and 2023 events, verified tidal records were downloaded from the NOAA tide station 9452210 Juneau, AK webpage (NOAA 2024). The tidal data was modeled as a stage hydrograph boundary condition for the calibration and validation simulations.

All supporting model hydrology data, including raw source data, are provided with the model.

3.0 HEC-RAS 2D Surface Water Model Development

3.1 Background

The 2D surface water model was developed using the latest current Hydrologic Engineering Center's River Analysis System (HEC-RAS, USACE 2024) software, version 6.6. The 2D model simulates hydraulics of unsteady and quasi-steady stated riverine flood flows and tidal elevations. Relative to a one-dimensional (1D) surface water model, use of a 2D model provides greater detail in representing distributary flood flow from the channel into and across the adjacent floodplain. This allows the model to consider topographic features that limit or allow lateral flow to spill from the channel, as well as structures or roads that direct and convey flow through residential and commercial areas, capturing both global and local influences on flooding.

The structure and content of the model meets the typical standards of a 2D BLE Level D model (FEMA 2021) by incorporating hydraulic structures and calibrating to historical data but not including channel bathymetry. The selected level of modeling detail was chosen based on best available data and compressed project schedule. Future model revision is recommended as additional data, specifically bathymetry, becomes available and as channel geometries change with subsequent flood events.

Model extents and mesh detail were selected to reasonably represent flooding in the Mendenhall River Valley from the outlet of Mendenhall Lake to the outfall of the Mendenhall River into the Gastineau Channel. Boundary condition error exists at the terminal limits of the model domain, as with all hydraulic models, limiting model solution confidence to the Mendenhall River reach and lateral floodplains.

3.2 Modeled Scenarios

Two primary conditions were modeled: Existing and Phase 1 HESCO. Each condition was modeled under specific flood events creating a unique model scenario.

Existing conditions were modeled using best available data of the current topographic and hydraulic conditions of the Mendenhall River and adjacent floodplain. This condition best represents hydraulic conditions during the 2024 GLOF. The Existing condition was calibrated to the 2024 GLOF event and validated against the 2023 GLOF event. Each of the 21 flow events discussed in Section 2.3 and Table 2-1 were modeled using the calibrated Existing condition. Resulting flow conditions associated with whole foot stage at the Mendenhall River gage were used to generate inundation and depth grid maps.

The Phase 1 HESCO (HESCO) condition represents Existing conditions with the inclusion of HESCO barriers positioned along the left (east) bank of the Mendenhall River, approximately from Fireweed Lane to River Court Way. The HESCO condition is intended to assess the efficacy of HESCO barriers in prohibiting community flooding and possible impacts to previously unaffected community members. The 1% AEP (100-year), 2024 GLOF, 45K+50% and 65K+50% flow events were modeled using the HESCO condition. Inundation and depth grid maps were developed for the 45K+50% and 65K+50% flow events.

3.3 Topographic Base Map

The 2D model sources several terrain files of varying resolution and dates of capture. The best available local data was used to composite a topographic basemap referenced by the model. Five unique terrain files were used to generate the composite surface:

October 2024 Draft LiDAR DTM: The most recent survey, covering most of the project area, was collected and processed by Elevate UAS for AKDOT&PF. The light detection and ranging (LiDAR) survey was collected on October 21, 2024, during a declining river discharge of 4,500 to 2,800 cfs. Additional LiDAR was captured through most of the Mendenhall River corridor on October 31 and November 1 during lower flow, however this data had not been processed as part of the provided draft digital terrain model (DTM). The draft DTM has a resolution of 1-foot. A final digital terrain model (DTM) including the later river corridor survey was provided but was not included in the model due to time constraints. This terrain surface served as the primary terrain source, to be supplemented as data was available and required.

October 2024 DOWL UAV Survey: Survey of the Mendenhall River corridor was collected from the approximate outfall of Mendenhall Lake to approximately 500 feet downstream of Egan Drive. Data was collected on October 3 and 4, 2024 by DOWL using an unmanned aerial vehicle (UAV) during a declining discharge of 920 to 680 cfs. Photogrammetric data was processed using structure from motion (SfM). The terrain surface was provided in a drawing file format (.dwg) and was exported to a 1-foot resolution .tif file for further processing. This terrain served to enhance channel topography below the October 2024 Draft LiDAR DTM water surface.

2021 Mendenhall Lake Bathymetry: Lake bathymetry collected by PND for the U.S. Forest Service on May 23, 2021. Elevations were derived from measured depths referenced to a water surface elevation measured at USGS gage 15052500. This 1-meter resolution terrain served to provide bathymetry below the October 2024 Draft LiDAR DTM water surface.

Juneau 2013 LiDAR DEM: The most recent terrain data currently available via the State of Alaska Division of Geological and Geophysical Surveys (DGGs 2024). The 1-meter resolution digital elevation model (DEM), captured in April 2013, was downloaded from the DGGs portal on November 14, 2024. This terrain served to expand the lateral extents of the October 2024 Draft LiDAR DTM, predominantly to include the coastal Gastineau Channel.

No bathymetric data of the current channel is available outside of bridge soundings collected by ADOT&PF at the Back Loop Road Bridge (Bridge Number (BN) 0217), Pedestrian Bridge (BN 1904), and Egan Drive Brotherhood Bridge (BN 0737). Soundings suggest approximately 6.0 to 6.5 feet of thalweg scour occurred at the Back Loop Bridge, 6.3 feet of thalweg scour occurred at the Pedestrian Bridge, and little measured thalweg scour occurred at the Brotherhood Bridge during the August 2024 GLOF. Local enhanced bridge hydraulics often result in greater scour and deeper channels than unbridged channels. Given the nature of localized hydraulics, bridge spacing, and variability in channel shape and slope between bridges, interpolating a bathymetric surface from bridge soundings was deemed questionable and unnecessary during the preliminary model calibration. Prior studies (NWS 2016 and FEMA 2020) do include bathymetry and were evaluated against the topographic base map; this data was not adopted given the magnitude of channel bed change in response to 2023 and 2024 flooding.

Building footprints were also included in the topographic map. Further discussion of supporting data and processing of the building raster are discussed below (Section 3.3.3).

3.3.1 Vertical Datum

The vertical datum used was MLLW (NTDE 83-01) based on two NOAA benchmarks for tide station “9452210, Juneau, Gastineau Channel, Stephens Pass, AK”. This is the same vertical datum used by past studies and relevant survey, including LiDAR, UAV, bathymetry, and high water mark surveys. As part of the 2015 Mendenhall River Flood Inundation Study (NWS 2016), USGS gage 15052500 was surveyed to

this datum. Add 55.99 feet to convert the reported river gage stage (e.g. 16 feet) to the project datum (e.g. 71.99 feet MLLW).

3.3.2 Horizontal Coordinate System

The project used the Alaska State Plane (ASP) Zone 1 projection in feet based off the North American Datum of 1983 (NAD83). All model input data were projected into the spatial reference shown in Figure 3-1.

```
PROJCS["NAD_1983_2011_StatePlane_Alaska_1_FIPS_5001_Feet",GEOGCS
["GCS_NAD_1983_2011",DATUM["D_NAD_1983_2011",SPHEROID
["GRS_1980",6378137,0.298,257222101]],PRIMEM["Greenwich",0.0],UNIT
["Degree",0.0174532925199433]],PROJECTION
["Hotine_Oblique_Mercator_Azimuth_Natural_Origin"],PARAMETER
["False_Easting",16404166.666666666],PARAMETER["False_Northing",-16404166.666666666],PARAMETER
["Scale_Factor",0.9999],PARAMETER["Azimuth",-36.86989764583333],PARAMETER["Longitude_Of_Center",-
133.6666666666667],PARAMETER["Latitude_Of_Center",57.0],UNIT["Foot_US",0.3048006096012192]]
```

Figure 3-1 Project Horizontal Datum Parameters

3.3.3 Terrain Processing

Terrain sources were evaluated for accuracy and preference of use prior to developing the existing conditions topographic base map. Due to spatial transformation limitations in RAS Mapper, all raster terrain data was reprojected into the World Geographic System 1984 (WGS 84), prior to creating the topographic base map in RAS Mapper. Original raster resolution was maintained and the WGS 84 projected raster was snapped to the native raster.

The October 2024 Draft LiDAR (2024 LiDAR) surface was identified as the primary base surface for terrain processing. To enhance channel geometry below the LiDAR-captured water surface, the October 2024 DOWL UAV (2024 UAV) terrain was adopted. A manually derived masking polygon was digitized along the edge of water using aerial imagery, hillshade terrain symbology, and contours. Within this polygon, the 2024 UAV surface was burned into the 2024 LiDAR. Similarly, the 2021 Mendenhall Lake Bathymetry was burned into the 2024 LiDAR over the full extent of the 2021 surface. The 1-meter resolution bathymetry was resampled to the 1-foot resolution of the 2024 LiDAR. Composite terrains were snapped to 2024 LiDAR to maintain the original terrain outside the limits of terrain burning. The composite surface was reprojected to the WGS 84 projection. The resulting terrain surface, 2024DOT_2024UAV_2021USFS_WGS84.tif was referenced as one of three surfaces in RAS Mapper to develop the model terrain.

The second surface was developed to represent buildings in the model terrain. Building footprints were downloaded from the Microsoft US Building Footprints GitHub link for Alaska (Microsoft 2024). Building polygons were reviewed against recent aerial imagery and the State of Alaska 911 Address Database (Alaska 2024) point file. Building footprints were removed where no structure was visible in aerial imagery and/or 911 point was missing. Building footprints were added where a 911 point was coincident with a structure in aerial imagery. A large number of the original building footprint features were manually adjusted where structures were poorly represented, likely due to image quality and the algorithm used to automatically generate original footprints. The footprints were then converted to a 1-foot resolution raster layer snapped to the 2024 LiDAR and assigned elevations 10 feet above the 2024 LiDAR. The resulting building surface, reprojected to the WGS 84 projection (Buildings_WGS84.tif), was referenced as the second of three surfaces in RAS Mapper.

The Juneau 2013 LiDAR was clipped to cover an area beyond the extents of hydraulic modeling, snapping the resulting terrain file to the original. Elevations, provided in meters, were converted to feet and the surface was reprojected to WGS84. The resulting 3-meter resolution raster (dtm_1m_Block7_masked_lp_FT_WGS84.tif) was referenced as third and final surface in RAS Mapper.

When developing the new terrain layer in RAS Mapper the three layers were not merged to a single raster and no vertical conversion was applied.

3.4 Hydraulic Inputs

Certain features and topographic characteristics influence the extent and magnitude of flooding within the model domain. The following describes the hydraulic inputs used to capture these influences within the model.

3.4.1 Hydraulic Control Features

Roadway spatial data provided by CBJ were leveraged to produce the initial hydraulic control feature dataset, or breaklines, for the 2D model. These datasets were reviewed and manually modified against the topographic basemap and aerial imagery. Unnecessary roads, such as those outside of maximum inundation extents, those having little no hydraulic control, or adding unnecessary complexity to the model, were removed from the final breakline layer.

Additional breaklines were added to high ground topographic breaks that could contain and/or direct floodwater, including but not limited to ridges, berms, and buildings. Breaklines were also delineated to represent channels and bounds of dominant conveyance corridors.

3.4.2 Buildings

Building footprints were incorporated into the topographic base map as discussed in Section 3.3.3.

3.4.3 Hydraulic Structures

Bridges on the Mendenhall River were modeled using SA/2D Connections and bridge geometries captured in ADOT&PF as-built plans and bridge sounding workbooks. Known culverts conveying channelized flow across roads were modeled using terrain modifications to provide hydraulic connectivity across the roads. In the absence of available data, the pedestrian bridge over Montana Creek was not modeled. Further discussion of hydraulic structure modeling is presented in sections 3.5.5 and 3.5.6.

3.4.4 Roughness coefficients

Polygons representing land cover classes were developed using aerial imagery, ground imagery, terrain, roadway spatial data, and the 2016 National Land Cover Dataset (NLCD). The 2016 NLCD data was deemed too coarse for use in the model, though associated land cover classes were referenced for assignment in the digitized land cover layer. Roadway polylines were buffered into polygons, which were cleaned and manipulated based on terrain and aerial imagery to represent roads. Additional paved, gravel, and turf areas with lower Manning's roughness values were manually delineated. The Mendenhall River was separated into four unique polygons, largely dictated by regions of homogenous channel slope captured in the terrain. These areas are roughly consistent with Manning's roughness regions used in the 2015 Flood Inundation Study (NWS 2016). Initial Manning's roughness coefficients were assigned based on past

studies and industry references. Roughness coefficients were adjusted as part of model calibration and sensitivity testing (Section 3.9).

Table 3-1 Material Types and Associated Manning Coefficient Values

LAND COVER CLASS (MATERIAL TYPE)	MANNING COEFFICIENT
Roads	0.02
Paved_Gravel_Turf	0.02
Mend_Lake	0.02
Mend_Lake_Outlet	0.048
Mendenhall River	0.03 – 0.06
Coastal_WB	0.024
Tidal_Marsh	0.035
Montana_Cr	0.05
Lakes_Ponds	0.03
Detention_Pond	0.045
Drainage_Ch	0.045
Developed_Residential	0.065
Developed_Woodland_Residential	0.12
Developed_Mixed	0.065
Woodland	0.15
Upland	0.05
Riprap	0.045
Open_Space	0.035
Shrub_Scrub	0.05

3.5 Mesh Generation

Three mesh geometries were developed having the same domain extents. The *Existing* conditions mesh geometry was developed to represent existing conditions within the Valley. The *Proposed_HESCO* conditions mesh geometry was developed to simulate the HESCO barrier in place. This allowed a breakline to be used to orient cell faces along the crest of the proposed HESCO barrier. It also allowed a separate terrain, modified to include elevated ground along the proposed HESCO alignment, to be associated with the *Proposed_HESCO* geometry (Section 3.7). To eliminate computational differences due to mesh variation when comparing existing and proposed HESCO conditions, a third geometry was developed. This geometry, identified as *Existing_woHESCO*, is a duplicate of the *Proposed_HESCO* geometry that is associated with the existing conditions terrain. Evaluating the direct impacts of the HESCO is achieved by comp

aring the *Proposed_HESCO* and *Existing_woHESCO* solutions, without introducing computational differences due to mesh structure.

3.5.1 Domain Extents

The model domain encompasses the entire Mendenhall River Valley, as presented in Figure 3-2. The upstream limit is located near the northern terminus of Glacier Spur Road, at a topographic constriction of Mendenhall Lake. The model does not extend to the current toe of the Mendenhall River Glacier, which will continue to retreat north. The downstream limit bisects the Gastineau Channel east of Juneau International Airport and the southwest terminus of the Gastineau Channel as it enters Fritz Cove. The model extends east and west to the topographic confines of the Mendenhall River Valley.



Figure 3-2 Mendenhall River (blue) study area and modeling extents

3.5.2 General Mesh Description

The modeled mesh geometries cover an area of approximately 14.5 square miles, consisting of approximately 120,000 cells. The nominal quadrilateral cell size is set to 50 feet.

3.5.3 Breaklines

The mesh was refined through the enforcement of breaklines, used to align cell faces (where the conveyance calculations occur) at key hydraulic influences. These include high ground, such as roadways, berms and natural ridges. Breaklines were also used to ensure cell faces captured the blockage of flow by buildings in critical locations, typically adjacent to the Mendenhall River. Manually delineated breaklines were also used to represent the stream network, generally aligning cell faces perpendicular to flow and refine the mesh along the stream corridors. For the With and Without HESCO geometries a breakline was assigned to the crest of the HESCO barrier. Final breaklines were enhanced with manual delineations. In places where the breaklines intersect, preference was given to the feature having the most hydraulic influence. Cell spacing around the breaklines is equal to the nominal cell size. In general, the following guidelines were followed:

- Breaklines aligned with or spanning Mendenhall River and Montana Creek were assigned a near spacing of 50 feet.
- Breaklines representing the Mendenhall River were assigned a near repeat of two to yield a total span of six cells, ensuring a minimum of two cells across the channel and capture of the adjacent banks.
- Additional breaklines were assigned along channel banks to capture localized elevated ground.

3.5.4 Refinement Regions

Refinement regions were used near the upstream and downstream limits of the model to increase nominal cell size to 100 feet. This yields a reduction in total cell count and computational instability without limiting solution accuracy.

3.5.5 SA/2D Connections

SA/2D connections were utilized to define hydraulic structures spanning the Mendenhall River; Back Loop Road Bridge (BN 0217), Pedestrian Bridge (BN 1904), and Egan Drive Brotherhood Bridge (BN 0737). Bridge geometries were entered using the Connection Data Editor, including bridge deck and piers. Bridge geometries are based on a review of as-built drawings, bridge inspection soundings, and geometries used in the 2015 Flood Inundation Study model (NOAA 2016). Cross section profiles were cut from the model terrain. The highest energy answer of standard step and momentum were used for low flow methods, while pressure and/or weir was selected as the high flow method. Hydraulic table parameters were selected to provide sufficient information without unnecessary detail covering the full range of modeled discharge. The resulting 1D family of rating curves were reviewed for anomalies.

3.5.6 Hydraulic Structures

Aside from the three bridges represented by SA/2D connections, no hydraulic structures were directly modeled within the HEC-RAS model. Hydroconnectors were used to approximate culvert openings through roadway embankments spanning dominant floodplain channels. Lines were drawn to represent

the structure and the openings were estimated as vertical walled slots based on available data. Opening widths were assigned based on attributed geospatial culvert data obtained from CBJ (2024) and Alaska Department of Fish and Game (ADF&G) fish passage survey reports (2024). Invert elevations were assigned from the modeled terrain. The hydroconnectors were burned into the DEM using RAS Mapper Terrain Modifications.

Mendenhall Valley's stormwater network was not included in this model, beyond major roadway culverts described above, as is typical of BLE models. Overbank floodwater conveyance via the stormwater network does occur but is not represented in simulated flood conditions.

3.5.7 Initial Condition Points

Initial condition points were used to represent the starting water surface elevation in Mendenhall Lake, downstream of Back Loop Road, and in Gastineau Channel. Initial condition points were used to 'fill' the Mendenhall River prior to model simulation to avoid losing significant runoff volume and initial model instability. Initial condition points were only referenced for calibration and validation simulations, as well as base flow simulations. All other modeled events referenced the final steady state solution for the respective base flow condition.

3.5.8 Reference Points

Reference points were used to represent the survey high water marks collected after the 20204 GLOF. Surveyed elevations were assigned to each of 22 unique reference points, which are plotted against the simulated stage hydrograph at each point providing a direct comparison of modeled and observed water surface elevations. High water mark survey was conducted by USACE. All high water mark survey data has been included with the model.

3.5.9 Manning's Roughness

The derived land cover polygons were input to RAS Mapper to generate a Land Cover layer with assigned roughness values. This layer was associated with the Existing and HESCO mesh geometries. The spatially Varied Manning's n on Faces option was selected to allow HEC-RAS to vary Manning's n values across cell each cell face. Manning's n values were manually adjusted in the Land Cover layer during model calibration; no calibration regions were used.

3.6 Boundary Conditions

External boundary condition lines were drawn to account for upstream inflow to Mendenhall Lake and downstream tidal stage. The lines were drawn roughly perpendicular to flow and covered the extent of flooding. An internal boundary condition line was used to assign baseflow along Montana Creek upstream of the Mendenhall River confluence.

3.6.1 Inflow

Inflow to Mendenhall Lake was assigned an unsteady flow hydrograph as discussed in Section 2.3. A quasi-steady flow hydrograph was assigned to Montana Creek equal to the baseflow discussed in Section 2.3. Modeled peak inflows are presented in Table 2-1.

3.6.2 Downstream

The downstream boundary condition was assigned a stage hydrograph, which was either unsteady for model calibration and validation or quasi-steady for all other model scenarios. Unsteady stage hydrographs were based on NOAA tide gage data reported for Juneau, AK Station 9452210 for the simulation period of interest. Quasi-steady stage hydrographs were assigned a value of +20 feet (MLLW). This is the same values used in the effective Flood Insurance Study (FEMA 2020) and the 2015 Flood Inundation Study (NWS 2016).

3.7 Terrain Modifications

Terrain modifications were used to recondition the Terrain Base Map to represent hydroconnectors across roadways, correct terrain errors, and approximate channel bathymetry at the Mendenhall Lake outlet. A terrain modification was also used to represent the current proposed HESCO barrier.

Hydroconnectors approximate conveyance conditions of culverts, allowing backwater to build and flow to pass high ground features. The dimensions of the terrain modification were defined to reflect those of the hydraulic connection (i.e., the diameter of a culvert). The placement of terrain modifications was based on available terrain and spatial data, as well as aerial imagery.

The 2024 UAS and LiDAR DEMs did not accurately capture pedestrian paths under the Egan Dr. Brotherhood Bridge, adjacent to each abutment. Inclusion of these paths increases bridge conveyance area at flood elevations exceeding top of bank elevations. Terrain modification dimensions were defined to reflect connectivity between upstream and downstream ground elevations, supported by terrain data and aerial imagery.

The absence of bathymetry at the Mendenhall Lake outlet has a direct influence on both lake stage and total downstream flood volume. Channel bathymetry was approximated by a trapezoidal channel with bounding thalweg elevations defined by available lake bathymetry and 2024 UAS elevations upstream of Back Loop Road Bridge. Slope breaks between terminal points approximate those captured in terrain data, supported by aerial imagery and general channel planform (i.e., steeper slope through contracted section at end of View Drive).

An elevated rectangular terrain feature was added along the proposed HESCO barrier alignment. The proposed alignment was offset 5 feet landward to represent the HESCO centerline. Underlying terrain was elevated 30 feet to ensure floodwater containment riverward of the barrier. A top width of 10 feet was assumed, locating the riverward face of the modeled barrier coincident with the proposed alignment. Additional, barrier footprint width will extend landward of the modeled barrier having no influence on channel conveyance. Failures, or breaches, in the HESCO barrier were not modeled as part of this study.

3.8 Simulation Parameters (Model Control)

3.8.1 Equation Set

The Diffusion Wave equation set was selected to expedite model calibration and simulation times to meet the compressed schedule. Sensitivity tests were performed using the available full momentum equations. Relative differences in modeled maximum water surface elevations varied little across the different equations set solutions. Water surface elevations did differ between equation sets but initial testing

indicates calibration adjustments could achieve historical observed data of comparable accuracy using full momentum to those obtained using the Diffusion Wave equation set.

3.8.2 Initial Conditions

An initial condition time of 6 hours, with a ramp up fraction of 1.0, was used for the 2024 calibration and 2023 validation simulations. This allowed the model to run the 2D computations for the 2D flow area by slowly transitioning the initial WSE from zero to their initial values in the simulated hydrograph. This allowed the model to stabilize to initial condition throughout the extent of the model domain. All other simulation events used the default initial condition time of 1 hour with a ramp up fraction of 0.1.

3.8.3 Simulation Period

The simulation period was a function of the modeled flow hydrograph. At a minimum, simulation periods were set to capture the storm peak at the basin outlet. Calibration and validation simulations were modeled over a period of 120 hours and 96 hours, respectively, centered around peak flow recorded at the Mendenhall River gage. Base flow simulations were modeled for a period of 48 hours to ensure steady state condition were achieved. Inundation events were modeled over a period of 96 hours.

The computation interval was controlled by the Courant Number, which allows the model to choose the optimal time step to resolve instabilities in the model. The hydrograph and detailed output interval were set to 15 minutes to match the shortest interval of historical gage data.

3.9 Calibration and Validation

There is currently one active streamgage on the Mendenhall River that can be used for calibration/validation: USGS Gage 15052500 (NWS Gage MNDA2). The gage, located along the north shore of Mendenhall Lake, was used as just one point of model calibration/validation. Simulated water surface elevations have a greater potential of being impacted by modeled boundary condition error and uncertainties associated with assumed bathymetry at the Mendenhall Lake outlet. Therefore, additional data was referenced with equivalent weight.

High water mark survey data collected by USACE following the 2024 calibration and 2023 validation events was also referenced, as was anecdotal information including resident interviews, aerial and ground imagery, and summary reports released by NWS. A reasonable amount of uncertainty should be applied to each observation: high water marks can be effected by wave action or local variations in hydraulic conveyance not captured in the model; public reports can be influenced by errors in perception or recollection as well as the timing of observed conditions relative to peak; timing of imagery, aerial or ground, may not be coincident with peak flood conditions.

Validation against past modeling studies was not performed given the significant amount of channel erosion that has been documented in terrain and bridge bathymetry.

Calibration and validation were performed prior to simulating inundation events.

3.9.1 Convergence metrics

The purpose of this study was to develop a preliminary, BLE 2D surface water model that can be leveraged to update flood inundation maps and evaluate efficacy of temporary flood fighting/mitigation measures.

With this purpose in mind, model convergence was identified as an acceptable ‘collective’ convergence of peak observed and simulated water surface elevations across the model. No one observed dataset was assigned greater weight than another, however the timing of documented observations was considered (e.g. image or video capture relative to peak flooding).

3.9.2 Model Adjustments

To best match calibration event stage, global Manning’s n values were adjusted within the Land Cover map layer. Calibration regions were initially used but did not yield any appreciable advantage to model calibration. Division of the Mendenhall River into individual reaches with a unique assigned Manning’s n did serve as relative calibration regions.

Another adjustment was the inclusion and modeled geometry of assumed bathymetry at the Mendenhall Lake outlet. This model adjustment served to prohibit excess stage in Mendenhall Lake, driven by limited outlet conveyance.

3.9.3 Calibration Results

Several regions were referenced during model calibration, dictated by available data. A general description of calibration results is presented below by region, progressing north to south. Detailed calibration data are provided with the model.

USGS/NWS gage: Simulated peak flood stage was 0.11 feet above reported peak stage.

Skater’s Cabin Road: Simulated peak flood stage was 0.01 to 0.08 feet above reported peak stage at three high water survey points, with an average error of 0.05 feet. The simulated peak stage was consistent across all three points.

View Drive: Simulated peak stage varied from 1.2 feet above to 0.55 feet below reported peak stage. The average error at the seven high water marks is 0.05 feet. Despite repeated efforts to adjust Manning’s roughness values, which included the addition of the Developed Woodland Residential land cover classification, and the inclusion of outlet bathymetry, calibration in this region was difficult. There is some uncertainty associated with high water marks, as evidenced by the range of error within a relatively small hydraulically connected area. This area likely experiences considerable bedform and conveyance capacity change during a large flood event which cannot be modeled with the static terrain.

Marion Drive: Public outreach interviews and local imagery provide anecdotal flood data along Marrion Drive. Generally, simulated inundation extents compare well with resident reports. Reported flood depths, which are highly subjective, were generally consistent with or slightly greater than simulated peak flood depths. Simulated flood extents are greater than observed, particularly along Fireweed Lane. This was deemed an accepted tradeoff to achieve sufficient overbank flooding at the intersection of Killewich Drive and Riverside Drive.

Killewich Drive: Three high water survey points were collected near the Killewich Drive Region, which includes two points along North Riverside Drive. Simulated peak stage was -0.80 to -0.56 feet below survey. Reasonable adjustments to Manning’s n values could not achieve high water survey elevations. When maximizing Manning’s n values to best achieve survey, simulated flood stages were carried across the floodplain to downstream regions of Meander Way and Riverside Drive. To better understand flooding and support calibration, resident reports and drone imagery were referenced. Seventeen resident reports

along Killewich Drive and Betty Court suggest flood extents are reasonably represented by simulated peak flooding, referencing distance from edge of riverbank, building pad, or home/deck. This was supported by aerial drone imagery captured during the 2024 GLOF. However, drone imagery and resident accounts indicate slightly less floodwater along the north end of Killewich Drive, but near equivalent flood extents near the south end of Killewich. Reported flood depths adjacent to homes were generally equivalent to simulated depths. Reported flood depth behind 3875 Killewich was 2 feet, with simulated depths ranging from 2.5 feet near the river to 1.6 foot near the home. Increasing simulated flood depth increased deviation of observed and simulated flood stage further south in the Valley. The need to balance negative and positive calibration error across the Vally became most evident in this and southern regions.

Meander Way: Four high water points were collected along and adjacent to Meander Way, including Turn Street, Parkview Court, and Center Court. At the northern terminus of Meander Way simulated peak stage was 0.20 feet higher than survey. Progressing south the simulated depths we 0.34 feet higher at Turn Street, 0.15 feet higher at Parkview Court, and 0.02 higher at Center Court. Anecdotal information suggests above bank depths increasing from 2 to 4 feet around the northern terminus of Meander Way, with simulated depths following a similar range of values. Simulated inundation extents in this area are nearly equivalent to or slightly exceed those documented in aerial drone imagery captured at approximately the same time as the simulated peak stage and presumably peak observed stage.

South Riverside Drive: Four survey points fall within this area. Two points along Rivercourt Way had simulated peak stage that was -0.31 and -0.13 feet lower than survey. On Riverside Drive near Mendenhall Valley Public Library the model simulated a peak stage that was approximately 0.52 to 0.57 feet higher than observed. Modeled inundation of Dimond Park, south of the library, was not evident in aerial drone imagery.

Egan Drive (Glacier Highway) / Brotherhood Bridge: A single highwater mark just downstream of the bridge is the southern-most calibration data point. The simulated peak stage was -0.07 feet lower than survey.

Across all 22 high water survey points, the simulated peak stage had a median error of 0.02 feet, a mean error of -0.01 feet, with a range of -0.8 and +1.2 feet, and a standard error of 0.10 feet.

3.9.4 Validation Results

The 2023 GLOF was modeled as a coarse validation of the 2D model. Changes in channel morphology during the 2024 GLOF, as captured in the modeled topographic base map, prohibits accurate modeling of the 2023 GLOF. This is evident in the difference between simulated peak stage and high water data collected by NWS survey following the 2023 event. Survey points were thinned to eliminate points of poor quality or inconsistent elevations at coincident locations.

The most significant differences occur along the south side of View Drive, where the simulated peak stage was approximately -2.73 to -4.80 feet lower than observed survey. This likely attributable to the approximate 6.0 to 6.5 feet of vertical scour recorded at Back Loop Bridge.

Downstream of Back Loop Bridge, the remaining 19 high water survey points had a median error of 0.36 feet, a mean error of 0.41 feet, with a range of -0.67 and +1.48 feet, and a standard error of 0.11 feet.

While this validation does not provide good correlation with the 2024 calibration, it does provide a general understanding of possible changes in model accuracy following future channel-modifying flood events.

This further supports the need to update future model versions following major flood events. Ideally, the model would be updated to represent new bathymetry and topography. At a minimum, model calibration should be performed to the latest event.

4.0 Simulated Event Results

Following model calibration, hypothetical flood events of varying intensity (Section 2.3) were simulated to develop flood fighting inundation maps and evaluate impacts and efficacy of the proposed HESCO barrier.

Inundation mapping was to be established at whole foot stage elevations at the Mendenhall River gage. Events yielding whole foot elevations at the gage were determined using a rating curve established from stage and discharge hydrographs reported by the USGS during the 2024 GLOF event. Establishing a new rating curve from recent gage data provides the most representative rating curve for current channel conveyance up to the peak historic flood event.

4.1 Existing Conditions

Simulated peak stage at the Mendenhall River gage deviates from the USGS rating curve at upper and lower limits, intersecting the rating curve near the 2024 GLOF event to which the model was calibrated. (Figure 4-1). At lower magnitude events this is attributed to error imparted by a lack of bathymetry in the model, specifically at Mendenhall Lake Outlet through the river reach to Back Loop Road. It is this geometry that largely controls stage at the gage, as well as the discharge conveyed through the modeled reach. At higher flood events, differences are likely attributed to extrapolating the curve beyond the 2024 maximum historic peak event, as well as model limitations. A comparison of rating curve and simulated peak stage at the gage are presented in Table 4-1.

It is unknown what magnitude of error is imparted through the study reach. Because the model was calibrated to the 2024 event, there is incrementally more uncertainty in simulation error for events that fall below the 2024 peak. However, there is still uncertainty in the accuracy of the rating curve as it assumes a relationship between measured stage and reported discharge. Above the 2024 peak stage the rating curve has been projected, imparting even greater uncertainty that cannot be quantified.

Ultimately, a gage rating curve will be used to relate discharge and stage when reporting future flood events. Given the error imparted by missing bathymetry, inundation maps were developed for the event discharges that yield whole foot elevations as determined by the rating curve, not the model.

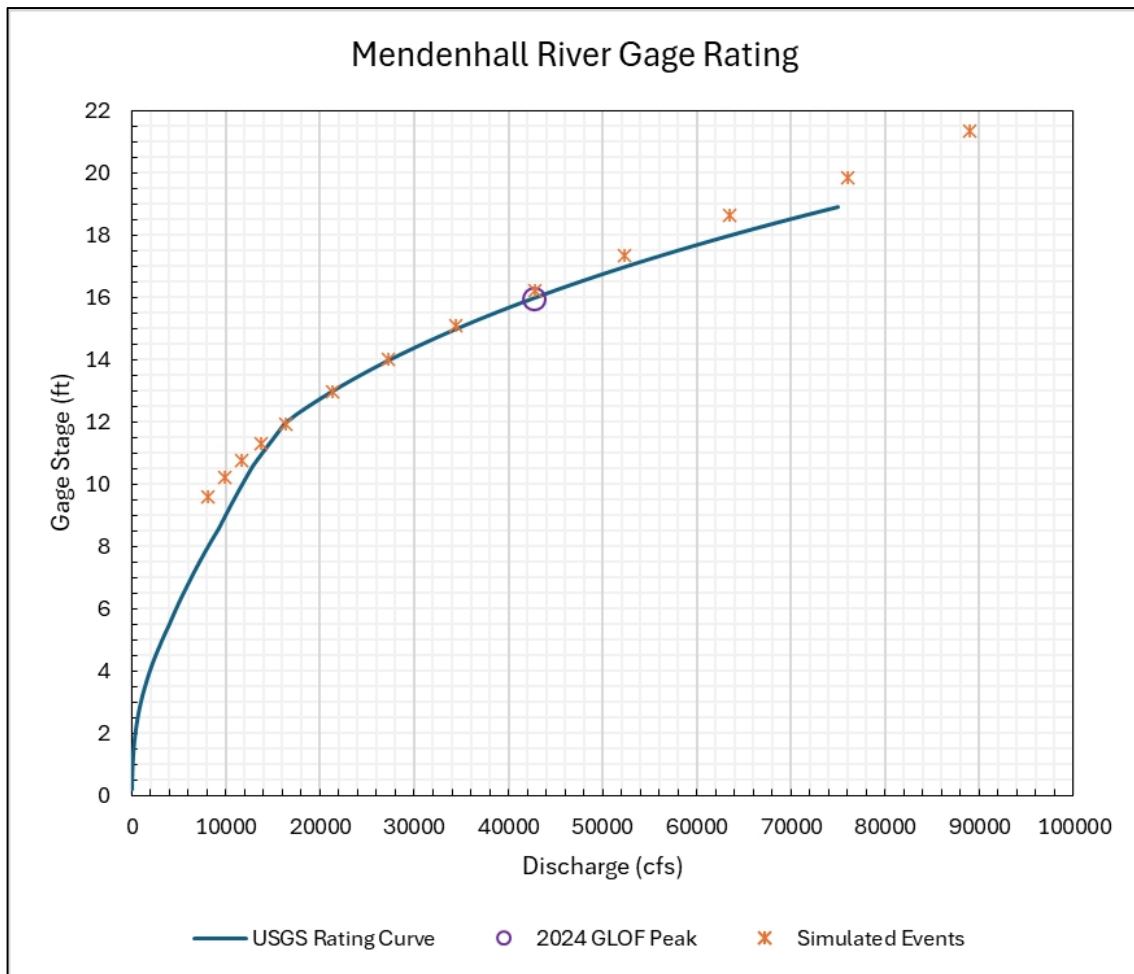


Figure 4-1 Rating Curve and Simulated Results at Mendenhall River Gage (USGS 15052500 / NWS MNDA2)

Table 4-1 Rating Curve and Simulated Peak Stage at USGS 15052500 / NWS MNDA2

EVENT	PEAK DISCHARGE (CFS)	RATING STAGE (FT)	SIMULATED STAGE (FT)	STAGE DIFFERENCE (FT)
8FT	8,080	8.00	9.58	1.58
9FT	9,923	8.99	10.23	1.24
10FT	11,706	9.99	10.75	0.76
11FT	13,798	10.99	11.30	0.31
12FT	16,405	11.99	11.93	-0.06
13FT	21,301	12.99	12.95	-0.04
14FT	27,289	13.99	14.02	0.03
15FT	34,404	14.99	15.10	0.11
16FT	42,788	16.00	16.21	0.21
17FT	52,369	16.99	17.36	0.37
18FT	63,515	18.00	18.62	0.62
19FT	76,039	19.00	19.86	0.86
20FT	89,002	20.00	21.33	1.33

4.2 Proposed HESCO Barrier Condition

The initial proposed HESCO barrier alignment was simulated using the 1% AEP (100-year) flood event and reviewed with CBJ. Minor changes were made to the alignment to minimize localized increases in stage with the HESCO in place. Restrictions in allowable HESCO placement, largely due to proximity of riverfront structures resulted in minor localized increases of 0.01 feet in the 100-year stage (Figure 4-2). This rise falls within the accuracy/resolution of the model and has no impact on existing structures (buildings).

The modified HESCO barrier alignment was then simulated using the 2024 GLOF event, which at 15.99 feet was nearly equivalent to the 16 foot gage stage, to evaluate relative efficacy and impacts of the HESCO barrier under the maximum historic flood condition. The HESCO barrier, as delineated in the model, provides complete protection of the Valley east of the barrier (Figure 4-3). As a result of confining eastern overflow to the channel, water surface elevations increase with only minor increases in flooding extents west of the channel. Simulated stage begins to increase at the Back Loop Road Bridge (+0.01 feet), achieving a maximum rise of 0.39 feet in the channel adjacent to Killewich Drive and dropping down to +0.08 feet at the Brotherhood Bridge. Increases in inundation are limited to low lying areas in the western floodplain. No residential or commercial structures are impacted by increases in flooding with the HESCO barrier in place during the 2024 GLOF.

During the simulated 18FT stage flood event the HESCO barrier continued to provide protection to the eastern Valley floodplain (Figure 4-4). Stage increased as much as 1.7 feet in the western floodplain near Montana Creek, with the maximum channelized rise of 1.40 feet occurring adjacent to Killewich Drive. Expa

ned flood extents with the HESCO in place do occur, most notably in the western floodplain. Downstream of Back Loop Road stage increases as much as 0.49 feet along N. Riverside Dr. and Tournure St., resulting in an approximate 15 to 20 foot widening of the floodplain. Additional flood extents do not capture buildings that are not already captured by flooding but could increase the magnitude of flooding to those existing structures. Under this condition, flooding of the Valley floodplain south of the HESCO barrier remains, however the stage largely drops in the eastern floodplain, as much as 0.8 feet, with a maximum rise of just 0.10 feet. The western floodplain near the Brotherhood Bridge experiences a rise of just 0.01 feet and no perceptible increase in flood extents.



Figure 4-2 Localized rise in 100-Year flood stage (red) as a result of the Proposed HESCO Barrier (white line)

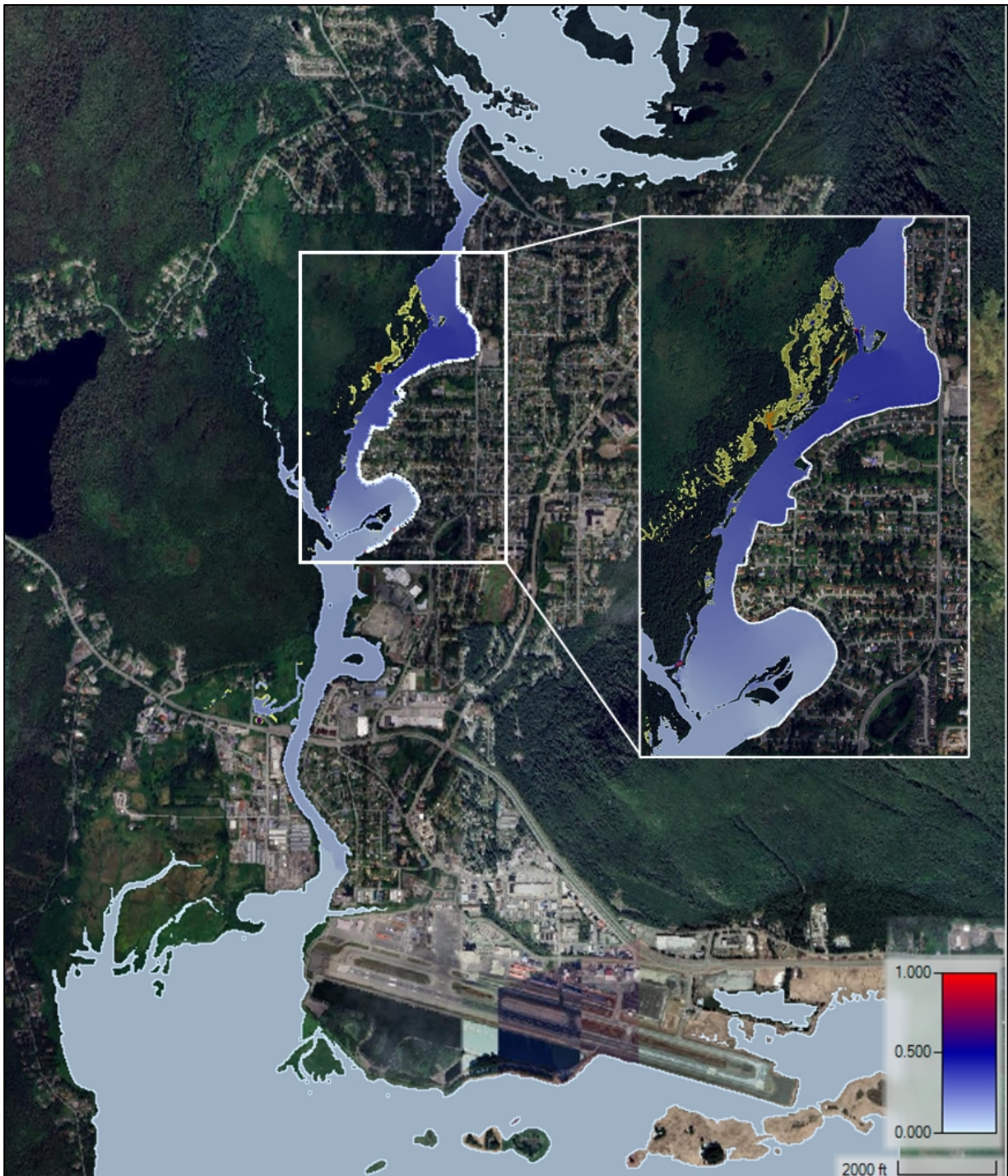


Figure 4-3 Simulated flood extents and rise in stage (feet) of 2024 GLOF as a result of the Proposed HESCO Barrier. Yellow depicts expanded flood extents as a result of barrier.

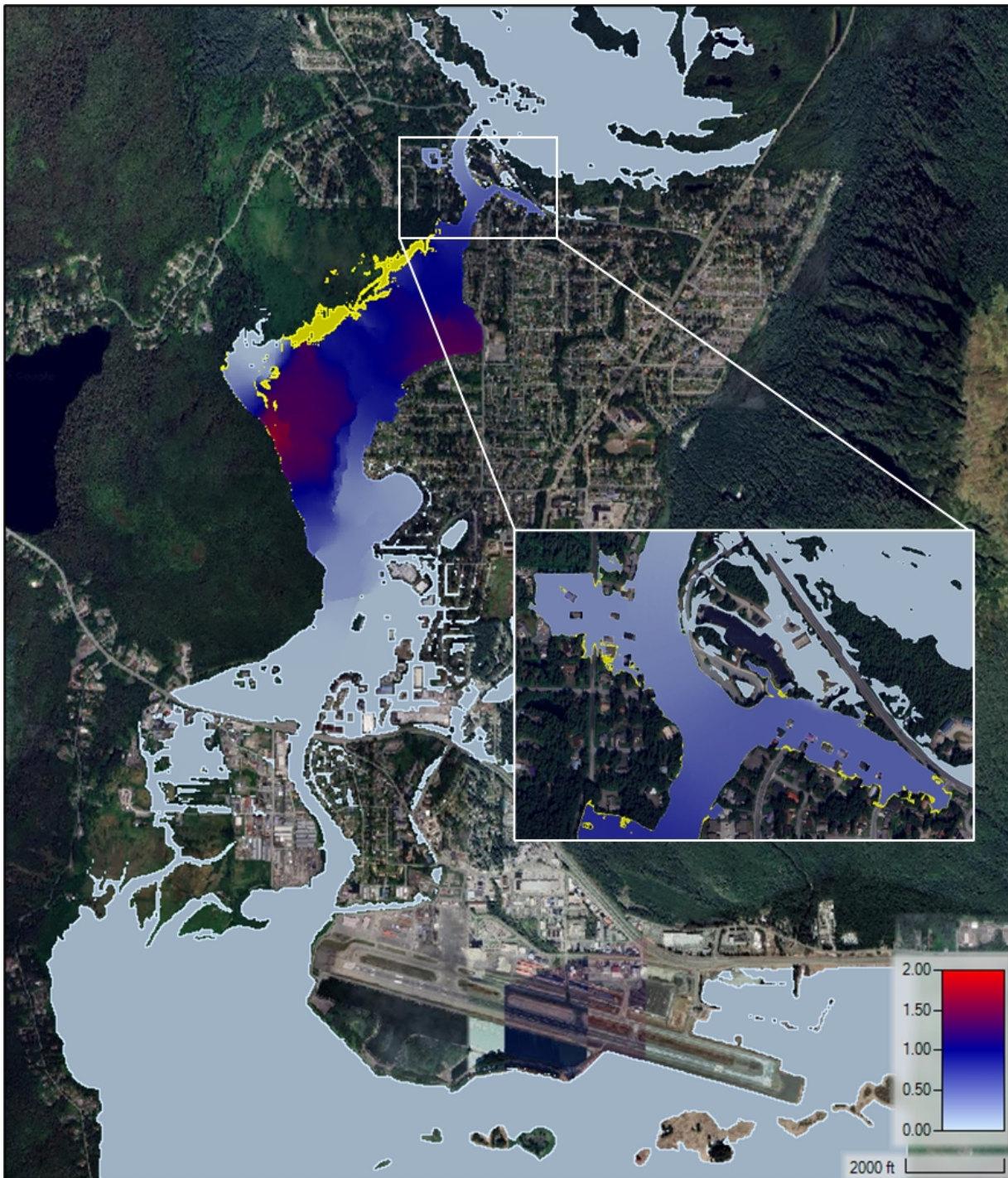


Figure 4-4 Simulated flood extents and rise in stage (feet) during an 18 FT flood event as a result of the Proposed HESCO barrier. Yellow depicts expanded flood extents as a result of barrier.

5.0 Inundation Mapping

Inundation maps of existing conditions were developed for the 8 ft to 20 ft stage events as determined by the USGS rating curve at the Mendenhall River gage. With each smaller event at lower stages, inundation mapping is largely inconsistent with historic measurements and is overly conservative near Mendenhall Lake (i.e. Skater's Cabin and USFS facilities). Future detailed modeling that incorporates Mendenhall River bathymetry at and downstream of the Lake outlet would likely minimize this error and allow for more accurate inundation maps at lower flood stage.

Extending simulated inundation mapping at higher events can similarly provide maps with increased uncertainty, given model limitations and use of an extrapolated rating curve. Flood maps out to the 20 ft stage should be used with an abundance of caution in their ability to predict actual flood conditions.

Inundation maps were developed for the 14 ft through 18 ft stage events under the proposed HESCO barrier condition. Additional information, including surveyed location and heights of HESCO barriers will be required to develop these maps above 18 ft stage. Actual HESCO elevations may not provide full protection under larger events.

5.1 Topographic Data

The topographic data used for inundation mapping is the same as the modeled topographic base map, described in Section 3.3.

5.2 Processing Steps

HEC-RAS 6.6 RAS Mapper was used to create an initial inundation boundary polygons and maximum depth grid raster for each event scenario. Render mode was set to Sloping (Cell Corners + Face Centers). RAS Mapper exported three depth rasters at a user defined resolution of 3 feet, one associated with each of the three source rasters used to develop the topographic base map.

Depth rasters exported from RAS Mapper were imported into ArcGIS Pro and merged using the Mosaic to New Raster tool. The inundation polygon generated in RAS Mapper was exploded, with individual polygon features selectively removed to eliminate hydraulically isolated ponding. This ponding is an artifact of mesh resolution and cell face placement, contributing a very small fraction of overall runoff volume and having no appreciable impact on model results. Some areas that appear to be hydraulically isolated but are connected via culverts or storm drains were maintained where reasonable. Remaining polygon feature parts were merged into a single feature representing the event specific inundation extents. Bridge decks were also removed from the inundation polygon where local maximum stage was equivalent to or greater than the bridge low chord. The merged depth grid raster was then clipped to the inundation polygon, snapping the clipped raster to the original mosaiced raster.

5.3 Uncertainties and Limitations

Results of this modeling and mapping effort have inherent uncertainties and limitations. Modeling is based on best available topography and bathymetry following the 2024 GLOF, largely limited by an absence of channel bathymetry. Simulation computations used the faster, more stable diffusion wave equation set that allowed for rapid development of flood maps and HESCO barrier analysis under the compressed project schedule. Though sensitivity analyses suggested little relative difference in model

solutions, the use of a full momentum equation set would provide more accurate results at the expense of computational time. Additional limitations include the uncertainty of future GLOF hydrograph characteristics, including probable release volume and peak discharge.

Model calibration was performed using observed flood data during the 2024 GLOF, the maximum historic flood. Uncertainties in observational data and the inability to simulate equivalent peak flood conditions at all observation points are not uncommon limitations that yield some level of model inaccuracy. Additional, uncertainty occurs when projecting simulated events above or below the calibration event.

Flood inundation maps are also subject to some uncertainty and error. Boundaries are based on simulated peak stage of a hypothetical flood hydrograph routed through a fixed channel geometry. Differences in the actual flood hydrograph and dynamic changes in channel geometry during flooding can yield differences in global and local flooding from those mapped in this study. Flood routing via the local stormwater system, not included in this model (Section 3.4.3), can also decrease or increase flooding in certain areas that are not currently represented in the maps.

5.4 Disclaimer

The flood inundation maps developed as part of this study are not intended to replace effective FEMA NFIP regulatory maps. The extents shown are intended to provide the community with a general understanding of potential near-term flood risk and to provide the City and Borough of Juneau planning resources to mitigate that flood risk. With HESCO maps assume full protection by the HESCO barrier: no overtopping and no breach. Actual HESCO elevations and structural integrity may not provide full protection under larger events

6.0 References

- Alaska Department of Fish and Game (ADF&G). 2024. Fish Passage Inventory Database (FPID). Spatial data and linked reports accessed December 2024 and January 2025.
<https://experience.arcgis.com/experience/1a4eb07b42ff4ebb8c71ba45adaedf0c/page/Fish-Passage/>
- Barnwell, W.W. and C.W. Boning. 1968. Water Resources and surficial geology of the Mendenhall Valley, Alaska,. U.S. Geological Survey Hydrologic Investigations Atlas 259.
- City and Borough of Juneau (CBJ). 2024. Spatially referenced and attributed polylines representing CBJ culverts. Provided by CBJ via email in November 2024.
- Curran, J.H., 2025, Flood frequency data for selected streamgages in the Mendenhall River Basin, Alaska, 1966–2023: U.S. Geological Survey data release, <https://doi.org/10.5066/P133MDF5>
- Federal Emergency Management Agency (FEMA). 2021. Guidance and Flood Risk Analysis and Mapping, Base Level Engineering (BLE) Analysis and Mapping. November 2021.
- FEMA. 2020. Flood Insurance Study (FIS), City and Borough of Juneau, Alaska. September 18, 2020. Flood Insurance Study Number 02110CV000B
- Michael Baker International (Michael Baker). 2024. Mendenhall Valley GLOF Modeling and Engineering Support, Task 1 Data Gathering Project Memo. December 27, 2024.
- Microsoft Maps (Microsoft). 2024. US Building Footprints for the State of Alaska. Accessed in November 2024.
<https://github.com/microsoft/USBuildingFootprints>
- Neal, E.G. and R.H. Host. 1999. Hydrology, Geomorphology, and Flood Profiles of the Mendenhall River, Juneau, Alaska. Water-Resources Investigations Report 99-4150.
- National Weather Service (NWS). 2025a. National Water Prediction Service, Mendenhall River Near Auke Bay (MNDA2), webpage.
- NWS. 2025b. Glacial Dammed Lake Data, Historic Release Data from Suicide Basin, webpage.
<https://www.weather.gov/aprfc/gdlData?17>
- NWS. 2025c. Suicide Basin Monitoring and Current Conditions, webpage. <https://www.weather.gov/ajk/suicidebasin>
- NWS. 2025d. Nested Suicide Basin GLOF hydrographs. Provided via email April 3, 2025.
MendenhallRiver_NWSAPRFC_GLOFcurveLibrary_20250403_forMichaelBaker.xlsx
- NWS. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. August 16, 2024. National Weather Service Alaska Region.
- NWS. 2023. Mendenhall River Flooding. August 5, 2023. National Weather Service Alaska Region
- NWS. 2016. Mendenhall River Flood Inundation Study 2015 (Post DQC Draft 1/05/2016). POC: Crane Johnson.
- State of Alaska (Alaska) 2024. NG911 Alaska Address Points. Accessed from the State of Alaska Geoportal in December 2024. <https://gis.data.alaska.gov/maps/agio-hub::ng911-alaska-address-points/about>

State of Alaska Division of Geological and Geophysical Surveys (DGGS). 2024. Juneau 2013 LiDAR DEM. Accessed via DGGS Elevation Portal in November 2024. <https://elevation.alaska.gov/>

US Army Corps of Engineers (USACE). 2024. Hydrologic Engineering Center's River Analysis System (HEC-RAS) model software, version 6.6. <https://www.hec.usace.army.mil/software/hecras/download.aspx>

U.S. Geological Survey. (USGS). 2025a. USGS 15052500 Mendenhall River Near Auke Bay Alaska (MENDENHALL R NR AUKE BAY AK) Stream Site. Accessed March 27, 2025. https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=15052500&agency_cd=USGS

USGS. 2025b. USGS Ste No. 15052500 Rating Curve. Accessed March 27, 2025. https://waterdata.usgs.gov/nwisweb/get_ratings?site_no=15052500&file_type=exsa



Frequently Asked Questions About Base Level Engineering

August 2022



FEMA

Attachment 9

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1. What is Base Level Engineering?

Base Level Engineering (BLE) creates flood data through an automated process. It combines high-resolution ground elevation data and the latest flood models. The results give communities a basic understanding of their flood hazards. Engineering models from a BLE analysis produce data that meet FEMA's standards for flood risk analysis and mapping.

BLE analyses can be cost-effectively done on a large scale, for a county or a watershed. They can also target a portion of a single stream. The results of BLE analyses—including flood elevations—help communities learn more about their floodprone areas.

2. What are the benefits of Base Level Engineering?

BLE analyses support a more complete picture of flood hazards. They produce data for areas that have not yet been studied for a Flood Insurance Rate Map (FIRM). They can also provide Base Flood Elevation (BFE) information for a FIRM's Zone A areas that are not supported by an existing hydraulic model. FEMA also uses BLE data to help communities identify areas where the FIRM needs to be updated.

It's important to note that BLE analyses are scalable, and their results can be published on FIRMs. Users can refine BLE modeling to assess the impacts of changes in a watershed. This is useful for development reviews, permitting, Letters of Map Change, and planning FIRM updates.

3. What is my community's role in the BLE process?

Communities work with FEMA to review the BLE data. They discuss ways to use it. It can increase local awareness of flood risk, aid emergency response, and inform planning or economic development.

4. What data will my community receive?

The datasets below will be available for all studied streams. Additional datasets may be produced. BLE results meet all of FEMA's technical, engineering and mapping standards. They can be used to help update FIRMs.

- **Hydrologic Analysis** – Each assessment estimates the peak flows for multiple storm events. At a minimum, the 10%, 4%, 2%, 1%, and 0.2%-annual-chance events are included.
- **Hydraulic Modeling** – Either 1- or 2-dimensional models are developed. Models are typically generated from a terrain surface. They may include channel surveys and hydraulic structures.
- **Flood Extents** –The 1%- and 0.2%- annual-chance events have seamless floodplain boundaries.
- **Estimated Water Surface Elevation Grids** – Grids are made for the 1%- and 0.2%- annual-chance events. Grids for other events may also be available. They report a water-surface elevation for each grid cell.

- **Flood Depth Grids** – These are prepared for the 1%- and 0.2%-annual-chance events. Grids for other events may also be available. They report the depth of water expected during a flood for each grid cell.

5. How can my community use Base Level Engineering data?

BLE datasets can inform planning decisions and activities that lead to a stronger community:

- **Hazard Mitigation Planning:** Mitigation planners need high-quality hazard data to properly assess risk. This helps them build a mitigation strategy for their community. BLE data show the limits of flood hazard areas, which can be used to quantify potential losses. Using BLE results in FEMA's Hazus program can help users prioritize flood mitigation projects.
- **Floodplain Management, Community Planning and Permitting:** Data from BLE analyses can help a community identify its flood-prone areas. The data can be used to guide development. A community can also use the flood elevations for building permits and elevation certificates, where BFEs are not available. See [Floodplain Management Bulletin 1-98, Use of Flood Insurance Study \(FIS Data\) as Available Data](#). This explains how to use draft or preliminary FIS data to regulate floodplain development.
- **Emergency Management:** The results of BLE analyses can be used in many phases of emergency management. These include planning, preparedness, response, and recovery. They can help identify routes for evacuations and first responders, and locations for shelters.
- **Letters of Map Change:** Estimated BFEs from BLE analyses can be used to request a Letter of Map Amendment (LOMA) or Letter of Map Revision Based on Fill (LOMR-F) in Zone A.
- **Risk Communication:** BLE data can help users understand their community's flood hazards. It can help them focus evacuation plan messaging on the most at-risk locations.

6. Does Base Level Engineering data replace the effective FIRM in my community?

No, not immediately. BLE data supplements the flood hazard data you are already using. It gives you more data to use for permitting and development decisions.

If your community's risk level is high and the current FIRM data is shown to be inadequate, FEMA may develop or update a FIRM using the BLE information. Another option would be to select areas to prioritize for an enhanced (Zone AE) study based on the BLE information. This may be appropriate for communities with an ordinance that requires the use of adopted FIRMs for local development regulation and floodplain management.

7. Can I use Base Level Engineering results to determine Base Flood Elevations in my community?

Yes. In most cases, you can use the results from a BLE analysis in local BFE determinations. It can be used for areas mapped as Zone A or D. It is also useful in areas where the effective FIRM has no mapped Special Flood Hazard Area (SFHA). If the area has been studied by more enhanced methods (Zone AE), use the effective FIRM and the flood profiles in the FIS report instead.

8. Can I use Base Level Engineering information to support a Letter of Map Change?

BLE data can be used to determine a BFE in Zone A. It can also support a request to remove the SFHA designation from a lot or structure. Submit the BLE results to FEMA with your LOMA or LOMR-F application. FEMA will see if it meets the technical and accuracy requirements for this kind of request.

You can also use a draft BLE analysis for a Letter of Map Revision (LOMR) request. If the data comes from a source other than the agency, FEMA will check whether it meets the technical and accuracy requirements for regulatory information. If additional data is needed, FEMA will ask you or your community to submit it.

9. Can my community adopt Base Level Engineering information through my local floodplain ordinance?

Yes. In general, communities may use BLE results as best available information if it is stricter than the effective data. They can also use it in areas with no data. Check your community bylaws, ordinances, and codes to find the appropriate way to adopt BLE information before using it to make decisions.

10. How does BLE data help during and after Discovery?

When it is available, communities can use BLE data for communication during the Discovery phase of Risk MAP. BLE data and mapping can be effective in the following ways. It can be used to:

- Address stakeholder interests when new flood hazard information becomes available.
- Identify areas at risk that may not have been mapped previously.
- Inform floodplain management and disaster recovery.
- Show where floodplain boundaries or BFEs may change and what areas would be affected.
- Identify streams where an enhanced analysis may be needed.

TECHNICAL SPECIFICATIONS

FLOOD BARRIERS

FLOODLINE™ 4836 UNIT



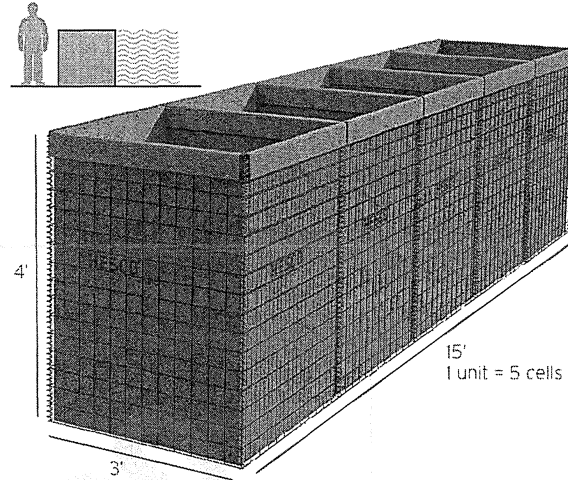
UNIT	HEIGHT	WIDTH	LENGTH
SL4836 (Green)	4' (1.22m)	3' (0.91m)	15' (4.57m)

Geotextile-lined units suitable for a wide range of uses, including the construction of walls and barriers, flood protection, erosion protection, protection against accidental explosions and homeland security applications. FLOODLINE units are particularly suitable in flood areas where damage from floating debris may be an issue.

GENERAL SPECIFICATIONS

Geotextile-lined welded mesh barrier coated to ASTM A 656. All wires conform to BS EN 10218-2:2012. Zinc-Aluminum coatings are to BS EN 10244-2:2009, where appropriate. The geotextile is a heavy-duty, non-woven, permeable, polypropylene fabric, available in green color.

All dimensions and weights are nominal. Diagrams and product images are for illustrative purposes only.



PACKAGING AND TRANSPORT INFORMATION

FLAT-PACKED INDIVIDUAL UNIT DIMENSIONS & WEIGHTS

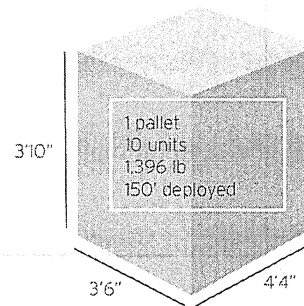
HEIGHT	WIDTH	LENGTH	WEIGHT
5" (0.13m)	3'6" (1.07m)	4' (1.22m)	136 lb (62kg)

PALLET INFORMATION

PER PALLET	HEIGHT	WIDTH	LENGTH	WEIGHT
10 units	3'10" (1.17m)	3'6" (1.06m)	4'4" (1.32m)	1,396 lb (633kg)

TRANSPORT INFORMATION

TYPE	PALLETS	UNITS	DEPLOYED LENGTH
13.5 Trailer	31	310	4,650' (1,417m)
20' Container	16	160	2,400' (732m)
40' Container	36	360	5,400' (1,646m)



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SITE CONSIDERATIONS, FOUNDATIONS AND DRAINAGE

The location where the structure will be built will normally be dictated by operational/ environmental requirements in response to the nature of the threat and the position of assets to be protected.

In most cases site preparation will be required. The level will depend on local conditions, wall design and/or time that the wall is expected to be in service.

The most basic requirement is a relatively level surface with a base of sufficient strength to support the structure. Where ground preparation is required the minimum procedure would be to strip all organic or topsoil material and replace with a granular fill material.

An improved foundation may be required when:

- The planned structure is large.
- The structure is to be in place for more than six months.
- The soil to be built on is weak and is unlikely to support the weight of the wall to be built.

The strength of the ground can be confirmed by using a cone penetrometer to ascertain the CBR¹.

¹CBR, or California Bearing Ratio – measure of the ground's ability to support loads.

hesco.com

BASIC CONSTRUCTION TECHNIQUES

Whether the structure is a simple, single-course wall or a more complex structure, basic construction techniques are still the same:

- Layout
- Joining
- Forming corners and curves
- Filling

LAYOUT

- Units are delivered to site, flat-packed on pallets.
- Units are lifted off the pallet and placed in the desired location.
- Unit placed on the ground horizontally with the arrow pointing away from the desired direction the wall is to be erected (*Figure 3*).
- Two men each grasp the end panel and together move in the desired direction. The unit will concertina from the horizontal to the vertical and become self supporting (*Figure 4*).
- Pull the unit out to its full length. Check it is in the correct position (*Figure 5*).
- Adjust the outer walls of the unit so that they are parallel.
- Make any joints or extensions required before filling the unit (see *Joining*, page 19).

SAFETY Ensure all personnel are properly briefed on the correct method of lifting and carrying weight. Persons should only lift and carry the weight that they feel comfortable with.

JOINING

Most walls will require units to be joined end to end. This is achieved by using the supplied joining pins.

Butt together the units to be joined and overlap and interlock the coils on each butted corner (*Figure 6*).

Insert the supplied joining pin through the overlapped coils, ensuring that it connects the coils fully and that it is fully inserted (*Figure 7*).

Before filling, ensure all geotextile flaps at the base of the unit are tucked in (*Figure 8*).

If a single tier is required, filling can start after all units in a run are aligned and joined. Compacting must be undertaken (*Figure 9*), for every 300mm (1') lift of fill. (See page 25 for the correct approach to filling).

NOTE The joining operation must be carried out prior to placing fill in any of the cells to be joined. Care should be taken to ensure that units are horizontally aligned before joining.

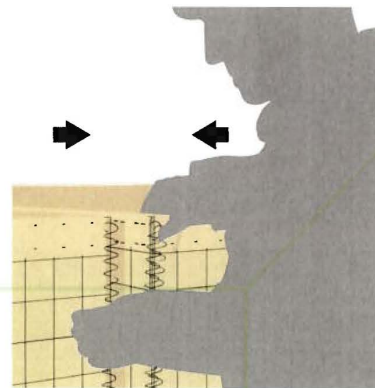


Figure 6 Butt together and overlap coils



Figure 7 Place joining pins

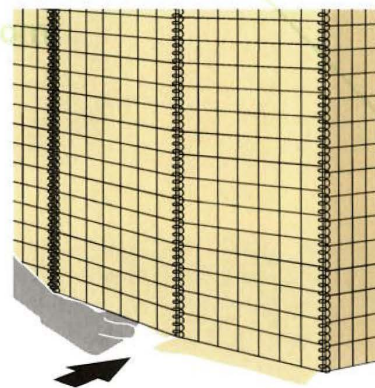


Figure 8 Tuck in flaps at base

JOINING VERTICALLY STACKED UNITS

Joining is achieved using the supplied hog rings.

- Fill the bottom unit to within approximately 100mm (4") from the top (*Figure 10*).
- Place the upper units and pull out (*Figure 11*).
- Alignment is achieved by lining the coils up vertically.

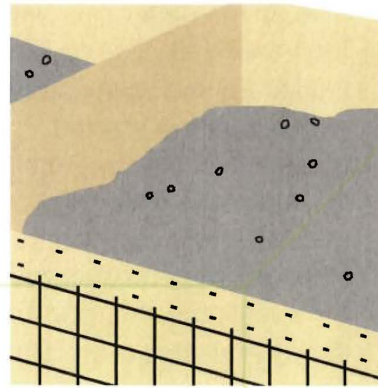
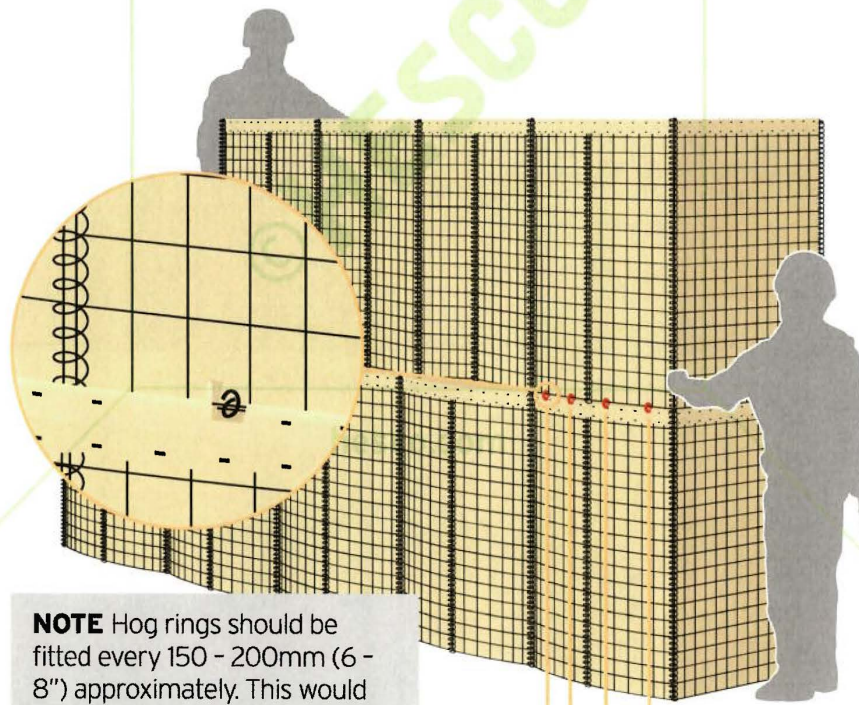


Figure 10



NOTE Hog rings should be fitted every 150 - 200mm (6 - 8") approximately. This would require two hog rings per MIL 2 side panel and four per MIL 1 side panel.

Suggested positions for hog rings

Figure 11

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CORNERS AND CURVES

There are various methods of making corners and curves with units.

Where a curve is required, pull out the center coils on each cell until you achieve the desired curve (Figures 16 and 17).

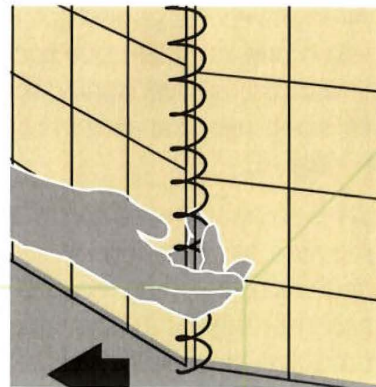
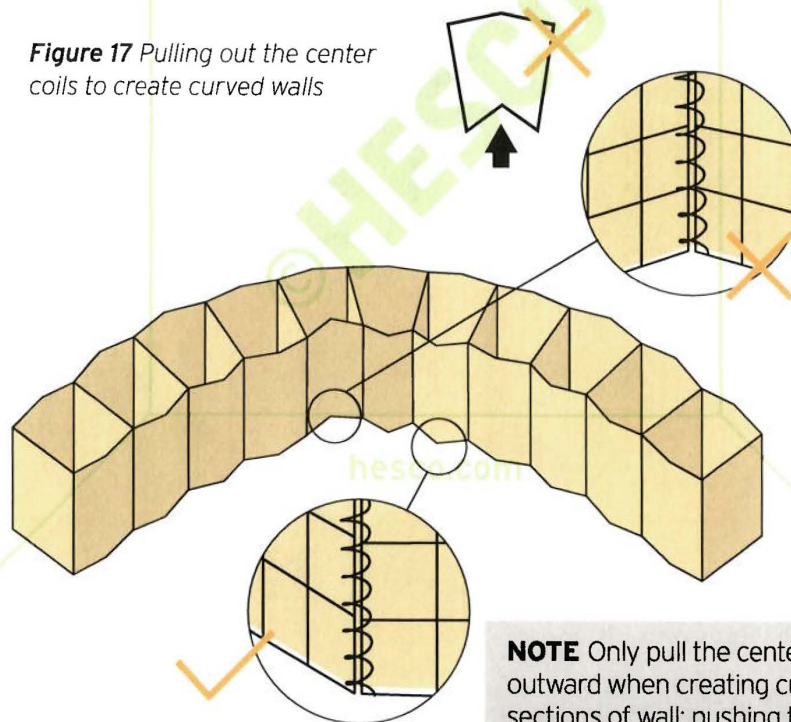


Figure 16

Figure 17 Pulling out the center coils to create curved walls

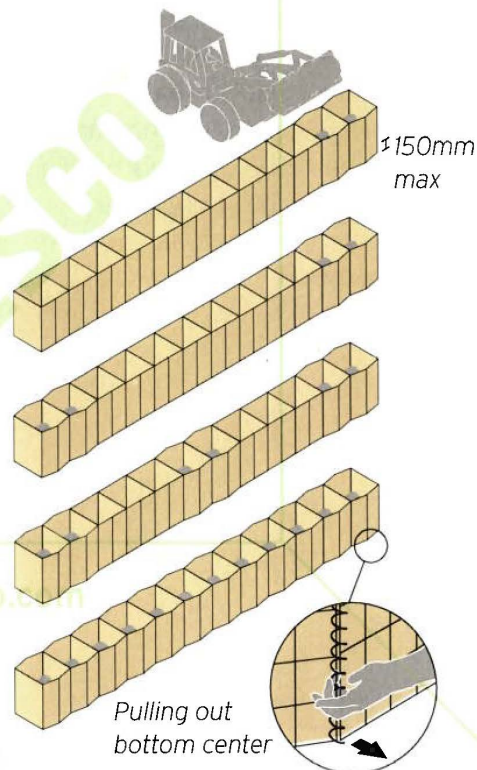
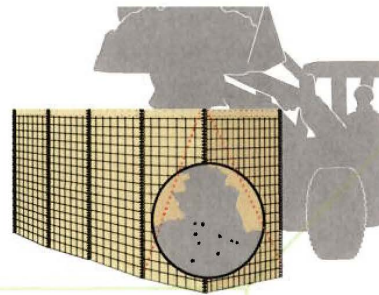


NOTE Only pull the center coils outward when creating curved sections of wall; pushing the center coils inward creates a wall section with less than the minimum protective thickness.

FILLING

The filling of a basic wall should be commenced with placing no more than 150mm (6") of material in the order shown in the diagram below.

It is important that the unit is checked for correct position, line and level prior to filling. The diagram assumes that the loading equipment will straddle two cells at once. The fill material should be loaded into units centrally.



NOTE It is important that the bottom center of each cell is pulled out after the first layer of material has been placed and spread, as shown at the bottom of the diagram.

DIVIDING AND SHORTENING

It is likely when building walls and structures that the unit may have to be shortened. Units are easily modified to suit this requirement. The majority of units arrive on site with the in-built ability to be split into two. With the MIL 1 unit, for example, this will result in two segments: one of four cells and the other of five.

Segments can be further shortened simply by folding in the end cells and securing by overlapping the coils and fitting pins. This can reduce the segment length by either one or two cell lengths. A unit can be further shortened using the procedure below:

- Erect the unit as shown on page 18, but do not fill.
- Open the coil hinges by bending at the desired location of the cut (*Figure 20*), this will normally be at the center coil if one is fitted. The coil must be opened at the top and bottom to facilitate its removal.

- Remove the coil by unscrewing, counter-clockwise, completely (*Figure 21*). Repeat on the opposite side.
- Cut the geotextile. Leave a 150mm (6") overlap if incorporating into a wall (see *page 29*).
- Separate the shortened segments (*Figure 22*).
- The coil can then be re-inserted to secure the loose side panels if required; alternatively, the loose ends can simply be incorporated into the wall.

Shortening the EPW 1 (UK MOD only) unit can be achieved by removing the pin securing the side panels.

NOTE If available, bolt croppers can be used to cut the welded mesh to speed the above operation.

All of the above methods result in the loss of a cell.

HALF SEGMENTS

Walls built up to existing structures may not fit exactly, therefore it may be necessary to split an end segment in half or add an extra half segment to the end to fill the gap (*Figure 23*).

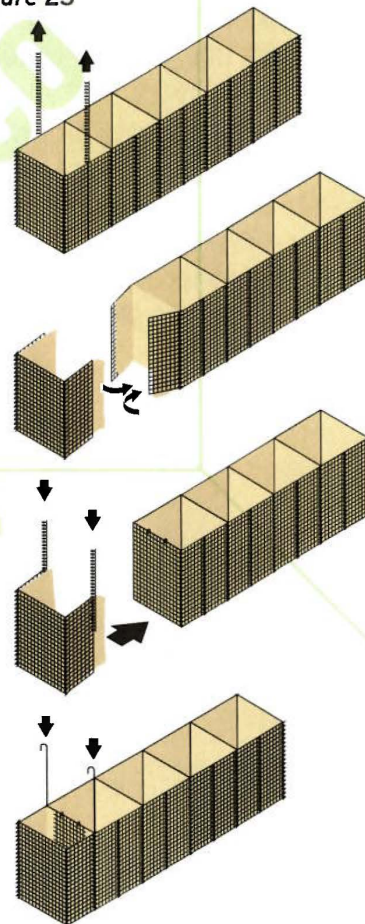
- To shorten a segment by half, unwind the two center coil hinges from the end cell of the unit.
- Cut the geotextile, leaving a 150mm (6") overlap, as shown. Fold in the two panels still attached to the unit and secure using hog rings.
- Rewind the hinges, butt the three loose panels up to the end panel of the unit.
- Fasten using joining pins.

To add a half segment to the end of a unit, remove a half segment from a spare unit and fit it to the unit to be lengthened by following the last two steps above.

NOTE This method is only applicable to units with a split side panel, as shown. Alternatively it can also be achieved by cutting the panel to the desired length.

The EPW 1 unit is split by removing the pins at the center of the side panel and then refastening the half cell to the end of the unit. To add half a cell, remove half a cell from a spare unit and fix it to the end of the unit in use.

Figure 23



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BUILDING HIGHER WALLS

The building of higher walls will normally require a pyramid type structure to be formed. This is by far the best means of creating a competent high structure.

- Make sure the ground is level and firm before proceeding to build a tall wall.
- Deploy lower units and fill completely to the top (Figure 27).
- Place and join the units for the second layer and fill them completely (Figure 28).
- Place and join the units for the third layer and fill them completely (Figure 29).

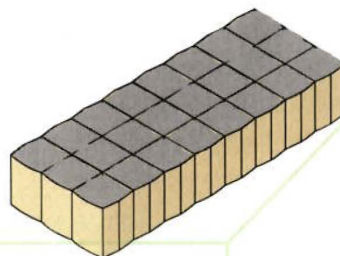


Figure 27

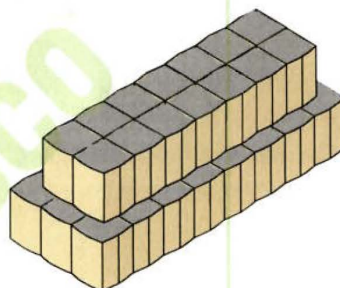


Figure 28

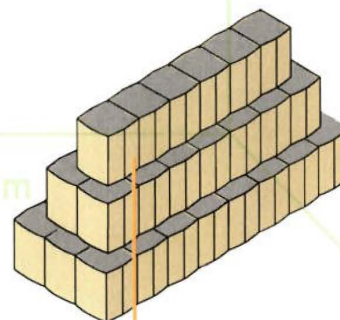


Figure 29 Offset subsequent tiers from the edge

WARNING Ensure the ground can withstand the loads from the units to be constructed.

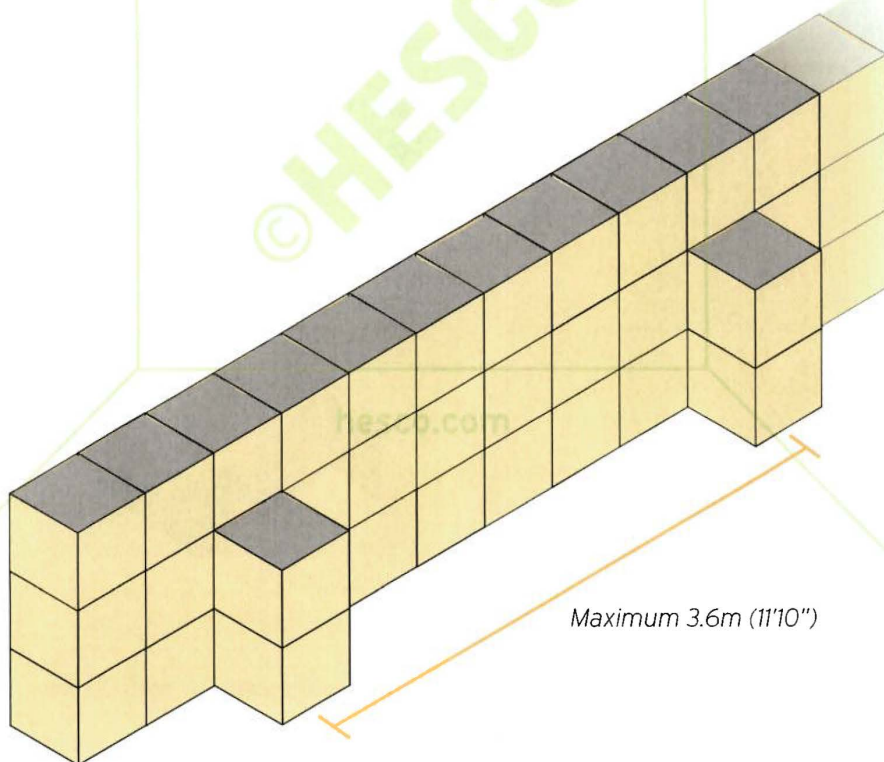
When building higher walls ensure the end wall is stepped in as shown in figure 29.

NOTE There is very little vertical joining required on a structure of this type.

INCREASE STABILITY OF THINNER WALLS

Due to a number of factors you may be required to build a tall, thin wall. In order to increase the stability of thinner defense walls, various alternative layouts can be used, as shown.

For example, if a MIL 2 wall, three storeys high, is adopted, then the wall should be laterally braced by intersecting walls or in-built stiffeners at no more than 3.6m (11'10") centers.



CONSTRUCTION PLANNING BASICS

FILL MATERIAL

The fill material used in building walls has a significant bearing on the walls' protective qualities. Generally, the ideal fill is a sand/gravel mix. This offers good construction characteristics, but, more importantly, offers a high degree of protection, with little incidence of secondary fragmentation.

Fine material such as silt and clay do not offer the same protection and may, indeed, require the wall to be wider. They are also not reliable construction materials.

Large clumps of earth should be avoided, as these may damage the unit, as can large stones.

In the main, large rocks or stones should be avoided as during a large blast they may present a secondary fragmentation risk. However, large rocks have been used where the threat has been accurately defined and there is no risk from secondary fragmentation.

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TABLE 2
FILL MATERIAL REQUIREMENT PER UNIT

UNIT TYPE	UNIT LENGTH (m)	NO. OF CELLS	MATERIAL PER UNIT (m ³)	MATERIAL PER UNIT (y ³)
MIL 1	10	9	22	29
MIL 2	1.22	2	0.5	0.7
MIL 3	10	10	13	17
MIL 4	10	10	20	26
MIL 5	3.05	5	1.2	1.6
MIL 6	3.05	5	4	5.2
MIL 7	27.74	13	190	249
MIL 8	10	9	25	33
MIL 9	9.14	12	9	12
MIL 10	30.5	20	133	174
MIL 11	3.18	6	9.2	12
MIL 12	33	30	103	135
MIL 19	3.3	3	13	17

NOTE The figures in Table 2 account for expansion of the unit, compaction of the fill and loss of fill.

REMOVAL

There may be a requirement to remove protective structures. This operation is often undertaken using heavy earthmoving plant to topple the walls and rip the welded mesh away from the fill material. While this method works, it results in a mass of welded mesh that is very difficult to handle and dispose of. The following pages, describe three alternative methods for removal.

The following risks may be present during demolition work:

- Working at height.
- Premature collapse of structure.
- Manual handling injuries.
- Collisions between earthmoving plant and pedestrians.

A safe system of work must be adopted and followed and should include the practices described below:

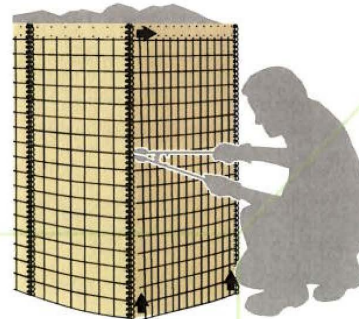
- Working at height should be minimized.
- When cutting the welded mesh always cut from the bottom up.
- Wear gloves and protective eye wear when handling cut and removed welded mesh.
- Competent banksmen to be appointed to manage earthmoving equipment and to ensure the operating area is kept clear of personnel.
- Ensure dump trucks are supervised whilst reversing.
- When an electric angle grinder or disk cutter is used it should be supplied with site-safe electricity.

WARNING Any demolition work can be dangerous. It is imperative that a safe system of work is adopted and followed, as described on this page.

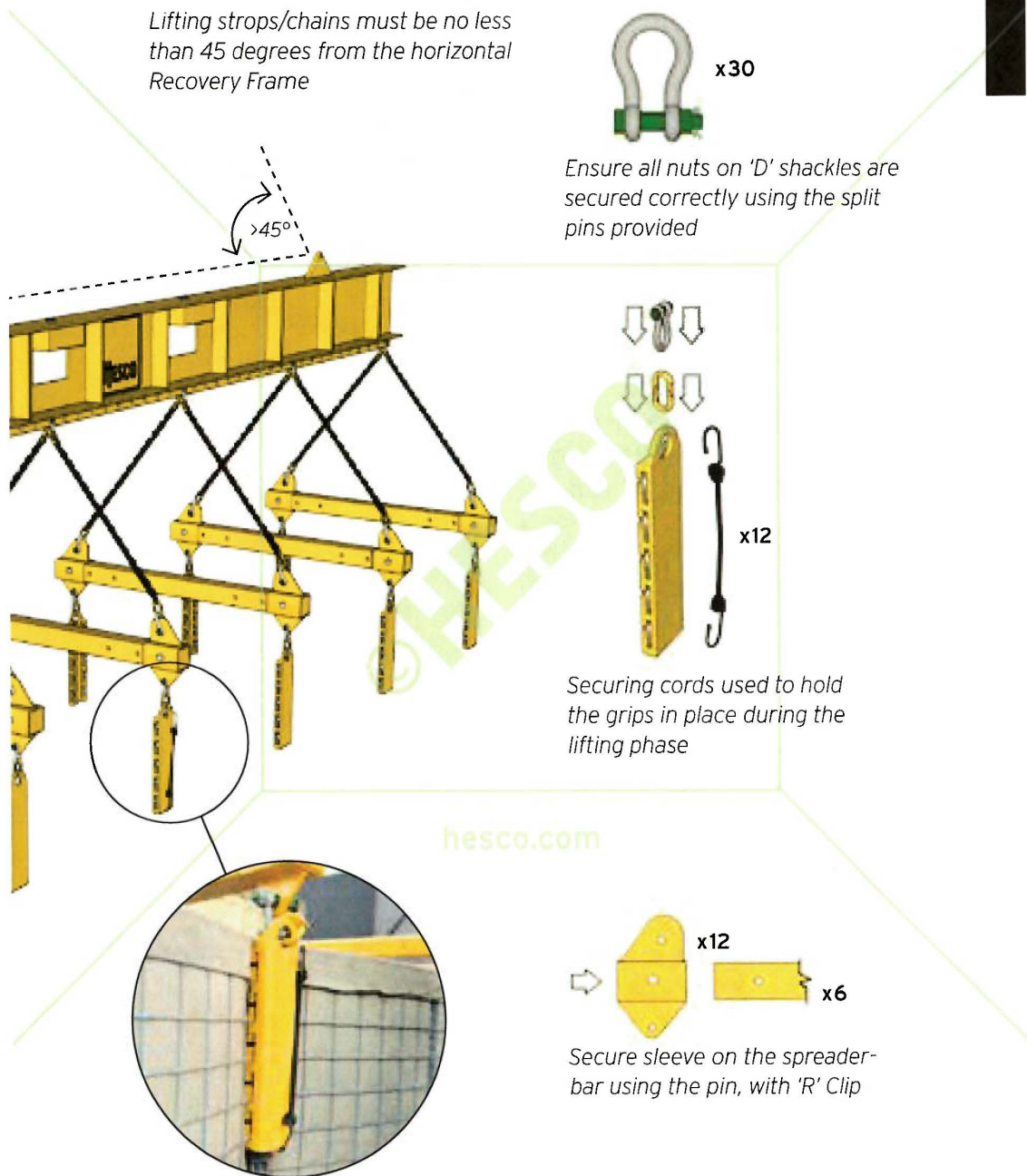
REMOVAL - METHOD 2

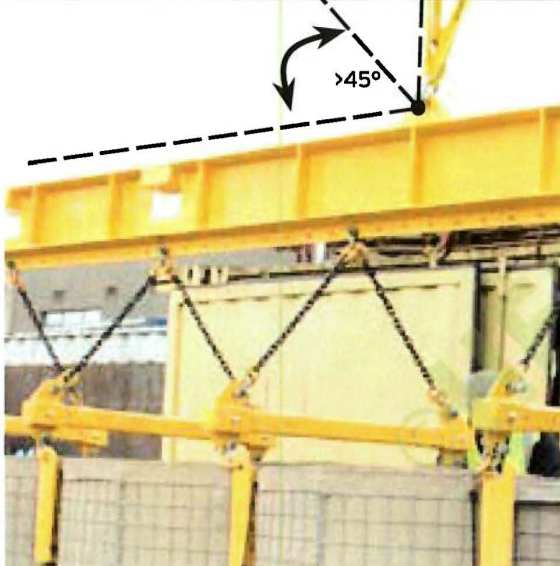
This method involves removing the welded mesh by hand and is only suitable for low walls.

- Identify and remove all material and equipment that is not to be disposed of.
- Use bolt croppers or an angle grinder to cut off all hog rings.
- Beginning at the bottom, cut the welded mesh all the way up both sides adjacent to the corner coils. Then cut the welded mesh across the top just under the stapled flap. Continue cutting until the welded mesh panel can be removed.
- Remove all accessible panels on a cell, as described in the previous step. The welded mesh of the diaphragm wall (between each cell's geotextile) should be removed as and when it becomes free.
- Do not cut the geotextile.
- Use earthmoving equipment to remove the fill (this will still be contained in the geotextile). The removal of the fill, where possible, should be carried out cell by cell.
- Continue until the site is cleared.



2 BASIC CONSTRUCTION GUIDELINES

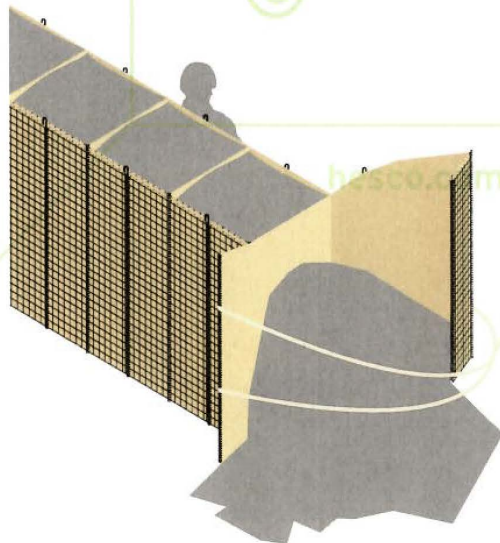
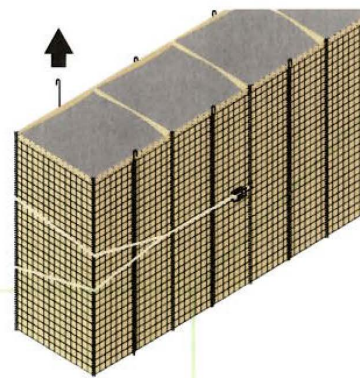


2 BASIC CONSTRUCTION GUIDELINES

- Prior to lifting, all personnel are to stand clear at least 5m from the units to be lifted. Once the banksman has confirmed that all lugs are located and that all personnel are clear from the area, the recovery process can begin.
- The lifting strops/chains must be no less than 45 degrees from the horizontal Recovery Frame as shown.
- Care should be taken to lift slowly and carefully paying particular attention to ensure that no chains or slings are twisted during lifting.
- Once the units have been lifted clear of the fill, the empty units can be lowered to the ground under guidance.
- Using a competent banksman; position the forks into the beam and secure using the T screws provided.
- Ensure that the beam is level, that the forks are parallel to the ground before securing and lifting, and that the machine is as close to the units to be lifted as reasonably practical.

The plain end of the Y-shaped strap is fed around the cell then joined to the ratchet strap, which is then hooked onto the far corner coil of the cell adjacent to the one being removed. Tighten the straps, using the ratchet, without distorting the coils.

Ensure only the pin on the opposite panel to the ratchet mechanism is removed. After removing this pin, release the ratchet strap, upon which the cell will swing open to release the fill material. Using a length of cordage assist in the operation. **All personnel must stand clear at this point.**



REPAIR PROCEDURE

Prior to repair, an assessment of the structure must be carried out by a qualified engineer/competent person.

Repairs to structures may be required as a result of attack or accidental mechanical damage. There are a number of repair techniques available, with the technique adopted depending on the nature and extent of the damage. In the majority of cases once repairs have been carried out the wall will once again be as competent as it was before the damage occurred.

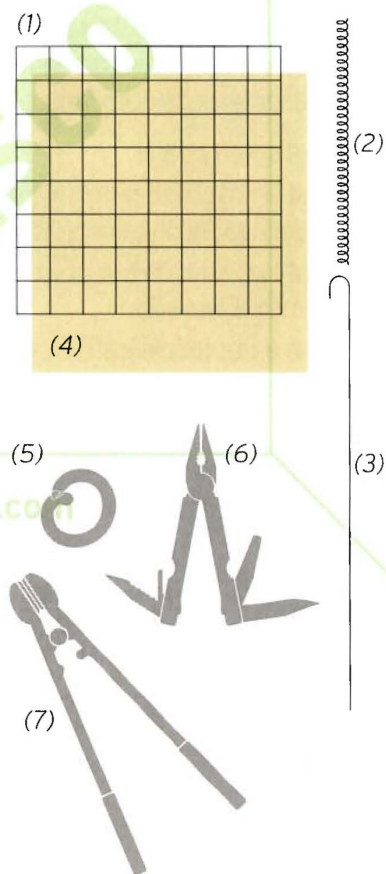
In general, material required for repair consists of:

- Welded mesh panels (1)
- Coils (2)
- Pins (3)
- Geotextile (4)
- Hog rings (5)
- Multi-tool (6)
- Bolt cutters (7)

Alternately repair material can be gained by cannibalizing parts from unused units.

Repairs may range from minor repair of torn geotextile to the repair or replacement of complete sections of wall.

The modular design of the units allows all of these repairs to be completed in an economical and efficient manner.



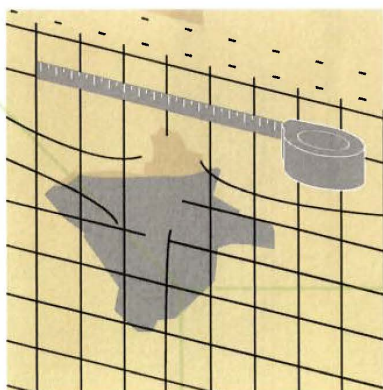


Figure 1

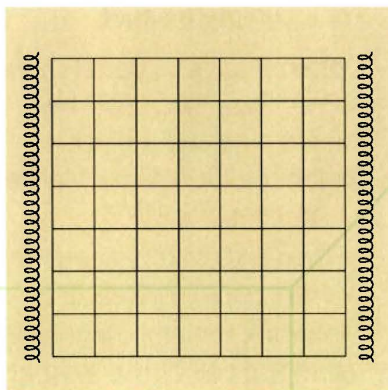


Figure 2

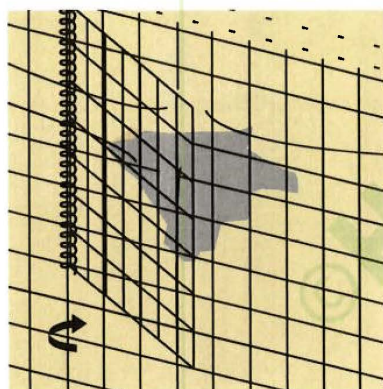


Figure 3

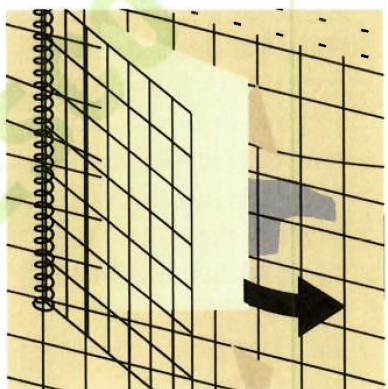


Figure 4

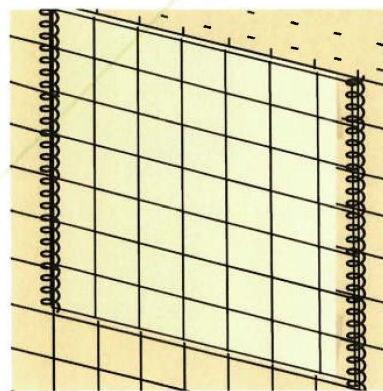


Figure 5

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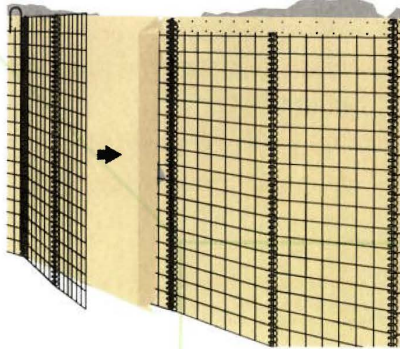


Figure 8

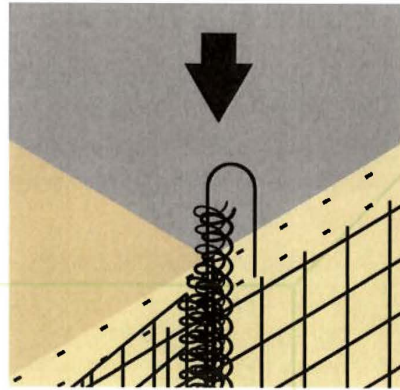


Figure 9

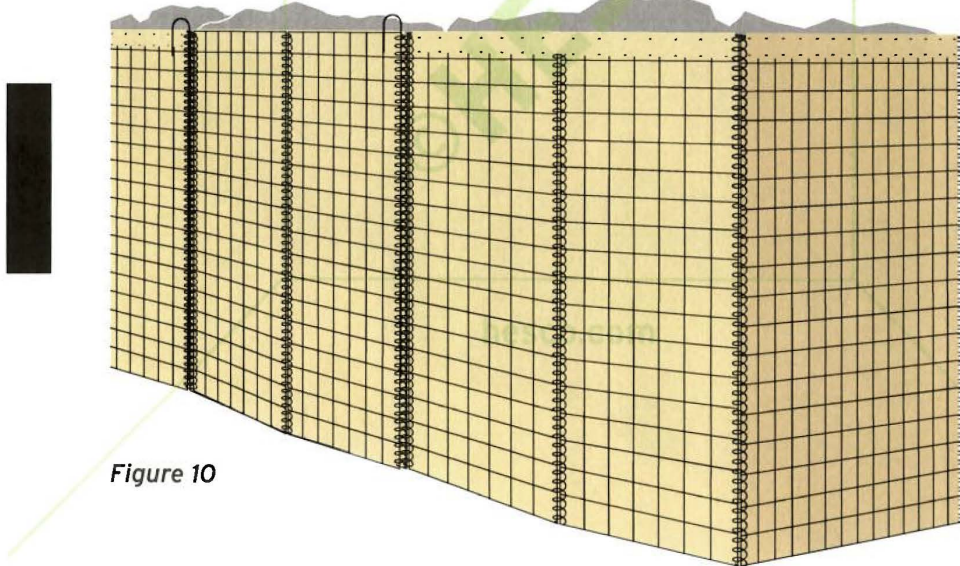


Figure 10

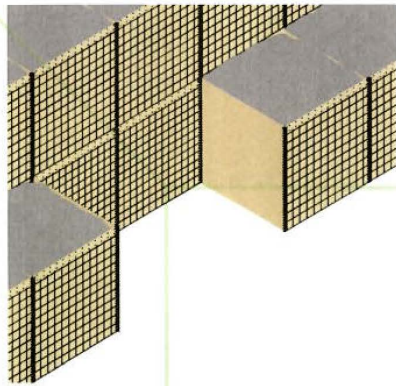


Figure 12

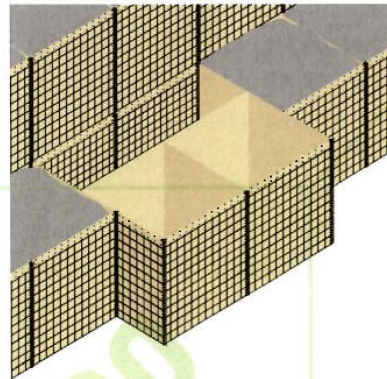


Figure 13

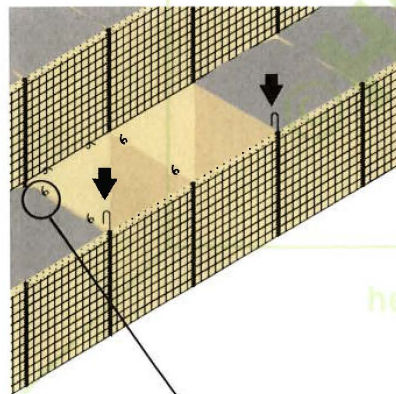


Figure 14 Cable tie or hog ring

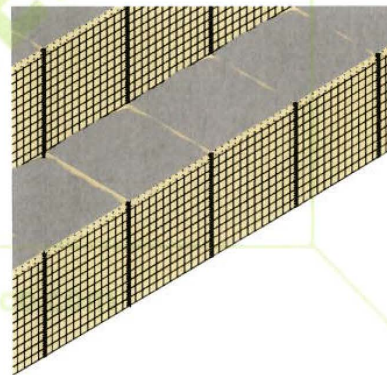


Figure 15

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CAPPING

For structures which are expected to have a long service life, are in wind-affected areas or are adjacent to aircraft operating surfaces, it is important that loss of fill material is prevented. This can be achieved by a number of means:

- Fill material should be shaped and sufficiently compacted to allow moisture to run off.
- The structure can be covered by tarpaulins or other waterproof membranes.
- A lean mix concrete or cement bound material can be used as the final layer.
- Where fine sand has been used as the bulk fill and is susceptible to being blown out by the wind, then a slightly coarser aggregate can be used to cap the cells.

PROTECTION AGAINST ULTRAVIOLET RADIATION

The geotextile used in HESCO Units is susceptible to the effects of UV radiation after a period of prolonged exposure.

Substantial developments and testing was carried out to produce the geotextile.

One of the problems with trying to predict the effects of UV is that it varies considerably from region to region and can, in fact, differ within the same region. There are, of course, a number of other issues which affect the severity of any degradation that may occur:

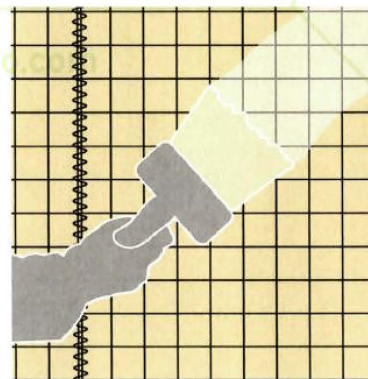
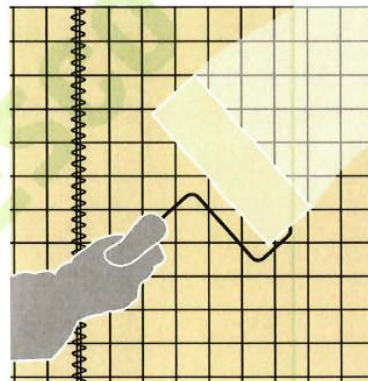
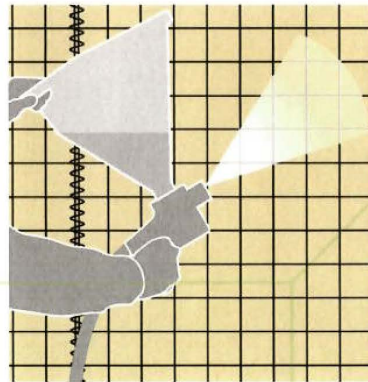
- Fill material used in the cells.
- Orientation of the units exposure to the sun.
- The level of fill within the unit.
- Stresses placed on the geotextile.

APPLICATION OF PROTECTIVE COATINGS

The application of a protective coating, such as cement slurry or, indeed, paint (water-based emulsion), is likely to significantly extend the life span of the geotextile.

A sprayer such as a stucco gun (texture gun) connected to a 7.5 cu ft/min compressor is ideal for the application of cement slurry or paint. Cement slurry or paint can also be applied by brush or roller.

Cement slurry is simply a mixture of cement powder and water. It is mixed to a strength of approximately 1:1 but this can be adjusted to suit whatever application method is being used. Sand can also be added if desired. The unit to be coated is often wetted prior to the application of the slurry; this prevents the slurry from drying out too quickly.





DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 22270
JUNEAU, AK 99802-2270

March 14, 2025

Regulatory Division
POA-2025-0089

Mr. John Bohan
City and Borough of Juneau
155 Heritage Way
Juneau, Alaska 99801

Dear Mr. Bohan:

This is in response to your February 16, 2025, application for a Department of the Army (DA) permit to place 935 cubic yards of shot rock and 3,735 cubic yards of rip rap fill material into 0.45 acres below the ordinary high water mark of the Mendenhall River to stabilize 1,085 linear feet of river bank. It has been assigned file number POA-2025-0089, Mendenhall River, which should be referred to in all future correspondence with this office. The project site is located within Section 24, T. 40 S., R. 65 E., Copper River Meridian; USGS Quad Map QUAD Juneau B-2; Latitude 58.38544° N, Longitude 134.59597° W; at three locations off Killewich Drive, North Meander Way, and South Meander Way in the Mendenhall Valley, in Juneau, Alaska.

DA authorization is necessary because your project will involve the placement of fill material into waters of the United States under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which will be performed in accordance with the enclosed plan (sheets 1-7), dated February 2025, is authorized by Nationwide Permit (NWP) No. 13, Bank Stabilization. Enclosed is a copy of the NWP No. 13, as well as the Regional and General Conditions. These documents are also available on our website at <https://www.poa.usace.army.mil/Missions/Regulatory/Types-of-Permits/Nationwide-Permits/>. The following Regional Conditions apply to your project: E – Delineation of Project Footprint and Maintenance of Hydrology Patterns. You must comply with all terms and conditions associated with NWP No. 13.

Further, please note General Condition 30 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to our office.

Unless this NWP is modified or revoked, it expires on March 14, 2026. If you commence or are under contract to commence this activity before the date that the

-2-

NWPs are modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWPs to complete the activity under the present terms and conditions of these nationwide permits. It is incumbent upon you to remain informed of the changes to the NWPs.

Nothing in this letter excuses you from compliance with other Federal, state, or local statutes, ordinances, or regulations.

Please contact me via email at Ranal.P.Vigil@usace.army.mil, by mail at the address above, by phone at (907) 201-5022, if you have questions. For more information about the Regulatory Program, please visit our website at www.poa.usace.army.mil/Missions/Regulatory.

Sincerely,

A handwritten signature in black ink, appearing to read 'Randal P. Vigil', with a large, stylized initial 'R'.

Randal P. Vigil
Chief, Southeast Section

Enclosures

ENCLOSURE



**US Army Corps of Engineers
Alaska District**

Permit Number: POA-2025-00089
Name of Permittee: City and Borough of Juneau
Date of Issuance: March 14, 2025

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to Randal Vigil at regpagemaster@usace.army.mil, or the following address:

U.S. Army Corps of Engineers
Alaska District
Regulatory Division
P.O. Box 22270
Juneau, AK 99802-2270

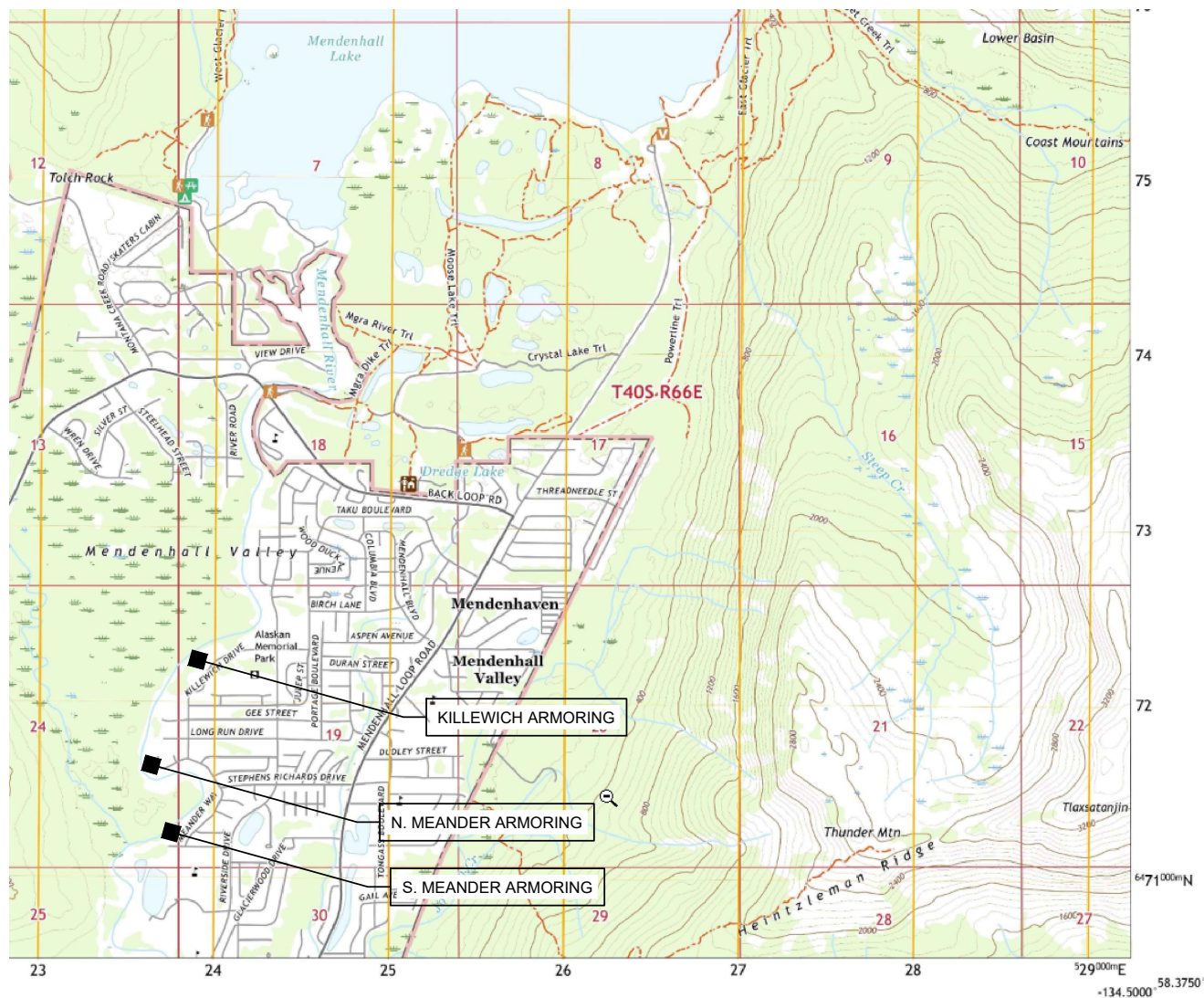
Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

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5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

POA-2025-00089 Mendenhall River

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND
LOCATION MAP

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:
1 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

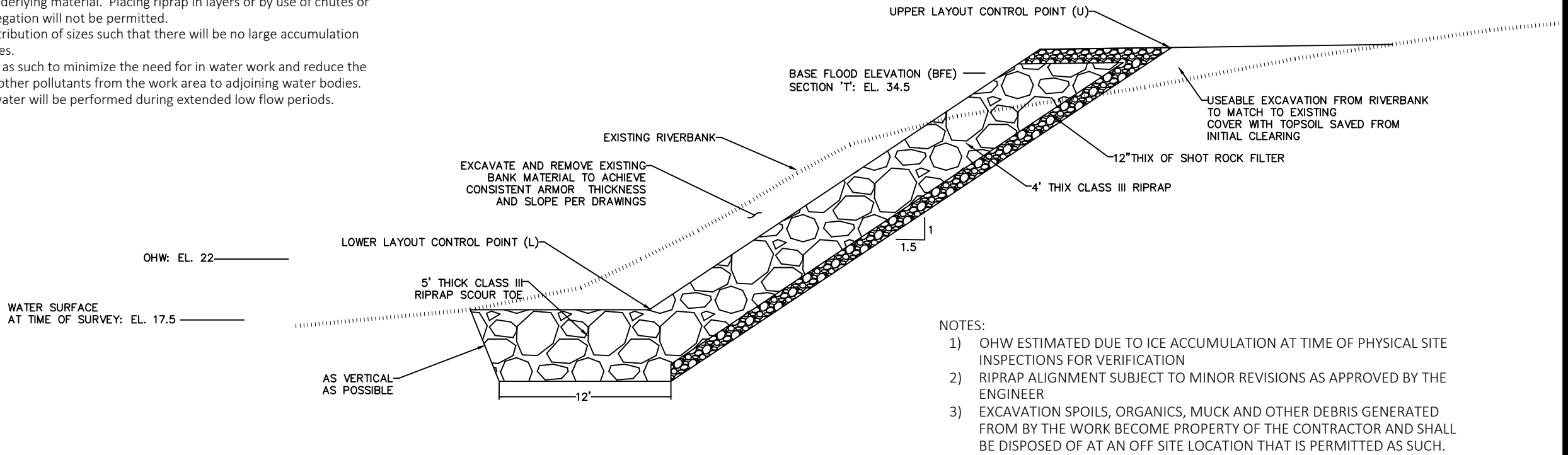
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



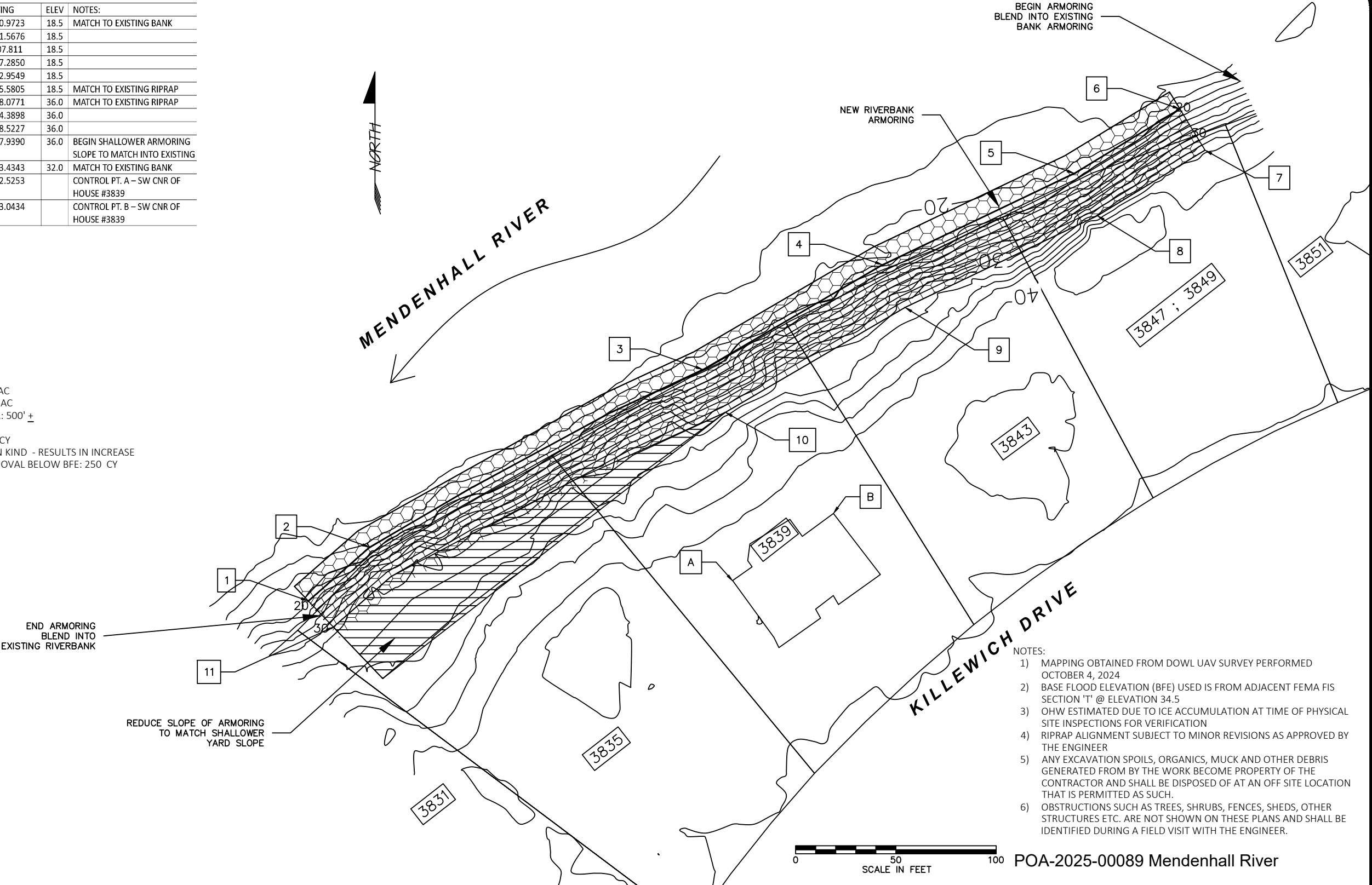
- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 3) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

POA-2025-00089 Mendenhall River

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	KILLEWICH ARMORING TYPICAL SECTION		SHEET: 2 of 7
Date	Description	Intls.					
			DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown				

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 500' ±
 - 4) TOTAL RIPRAP VOLUME: 4,950 CY
 - 5) RIPRAP VOLUME BELOW OHW: 2210CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY



- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CONSTRUCTION

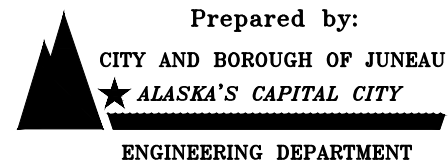
-
- EL. 32
- OHW: EL. 20
- WATER SURFACE AT TIME OF SURVEY: EL. 15.5
- EXCAVATE AND REMOVE EXISTING BANK MATERIAL TO ACHIEVE CONSISTENT ARMOR THICKNESS AND SLOPE PER DRAWINGS
- BASE FLOOD ELEVATION (BFE) EL. 31.4
- EXISTING RIVERBANK
- UPPER LAYOUT CONTROL POINT
- LOWER LAYOUT CONTROL POINT
- 5' THICK CLASS III RIPRAP SCOUR TOE
- AS VERTICAL AS POSSIBLE
- 12'
- 1:1.5
- 12" THICK OF SHOT ROCK FILTER
- 4' THICK CLASS III RIPRAP
- MATCH TO EXISTING GROUND COVER WITH TOPSOIL SAVED FROM INITIAL CLEARING AND SEED
- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF INSPECTIONS FOR VERIFICATION
 - 2) BFE OBTAINED BY INTERPOLATING BETWEEN FEMA FIS MAP SECTIONS "Q" AND "R" FLOOD ELEVATIONS
 - 3) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY ENGINEER
 - 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS TO BE REMOVED

NOTES:

- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
- 2) BFE OBTAINED BY INTERPOLATING BETWEEN FEMA FIS MAPPING SECTIONS "Q" AND "R" FLOOD ELEVATIONS
- 3) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
- 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Initials



**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**N. MEANDER ARMORING
TYPICAL SECTION**

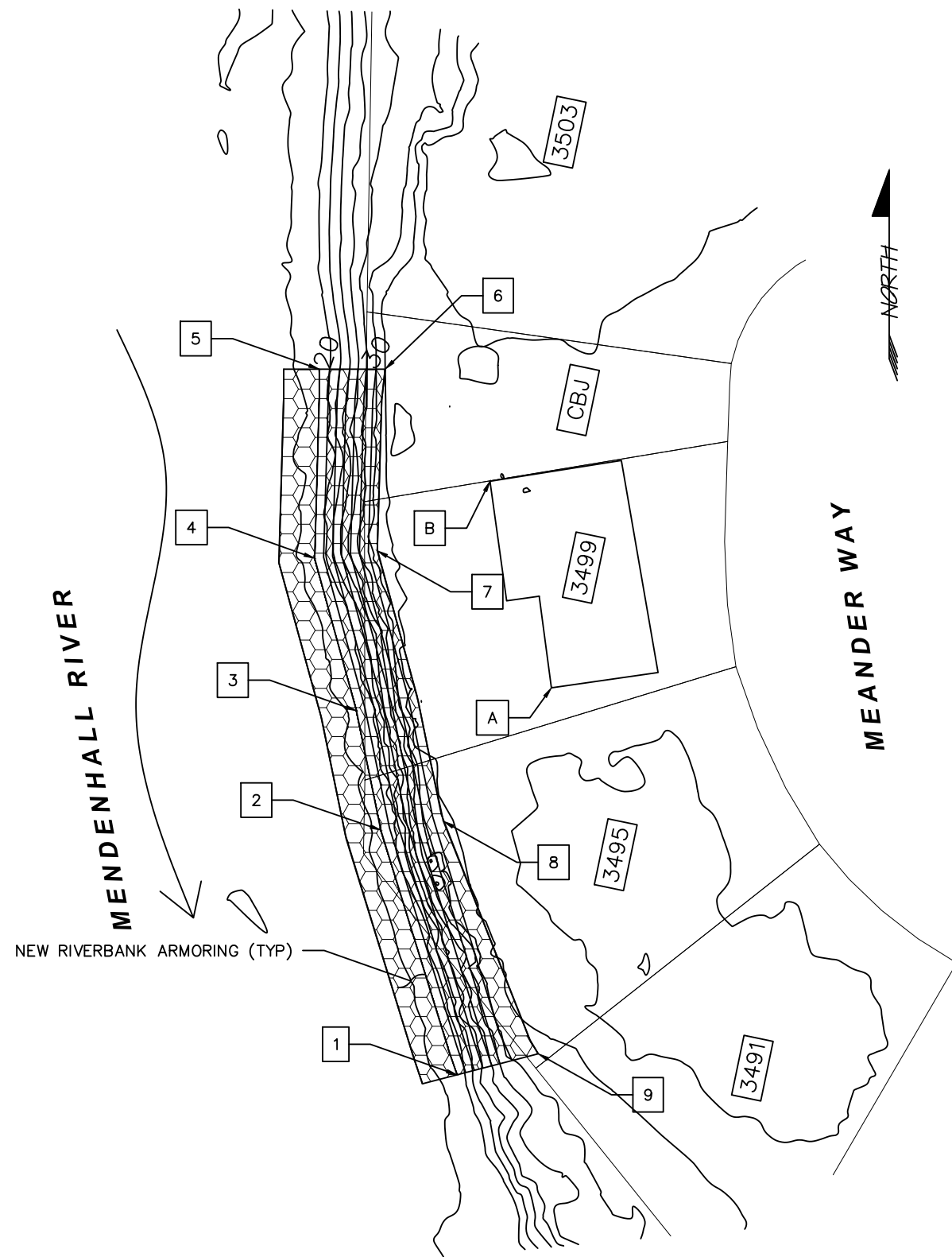
DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:

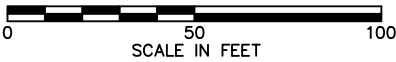
4 of 7



- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 1540 CY
 - 5) RIPRAP VOLUME BELOW OHW: 770 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 7 CY

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2393896.5525	2507610.8681	18.0	Match TO EXISTING BANK
2	2393978.9938	2507585.2101	18.0	
3	2394019.0284	2507577.0045	18.0	
4	2394070.3146	2507562.9437	18.0	
5	2394133.9212	2507564.5190	18.0	MATCH TO EXISTING RIPRAP
6	2394133.9212	2507586.6734	32.0	MATCH TO EXISTING RIPRAP
7	2394072.8377	2507584.0270	32.0	
8	2393981.8148	2507606.2823	32.0	
9	2393903.6179	2507638.1839	32.0	MATCH TO EXISTING BANK
A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT – NW CNR HOUSE #3499

- NOTES:
- 1) THIS WORK WILL BE TO RECONSTRUCT AN EXISTING RIPRAP ARMORED BANK. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS ELEVATION 30.4. THIS HAS BEEN INTERPOLATED BETWEEN FEMA SECTIONS 'Q' AND 'R'
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

N. MEANDER ARMORING

CONSTRUCTION PLAN

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

5 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

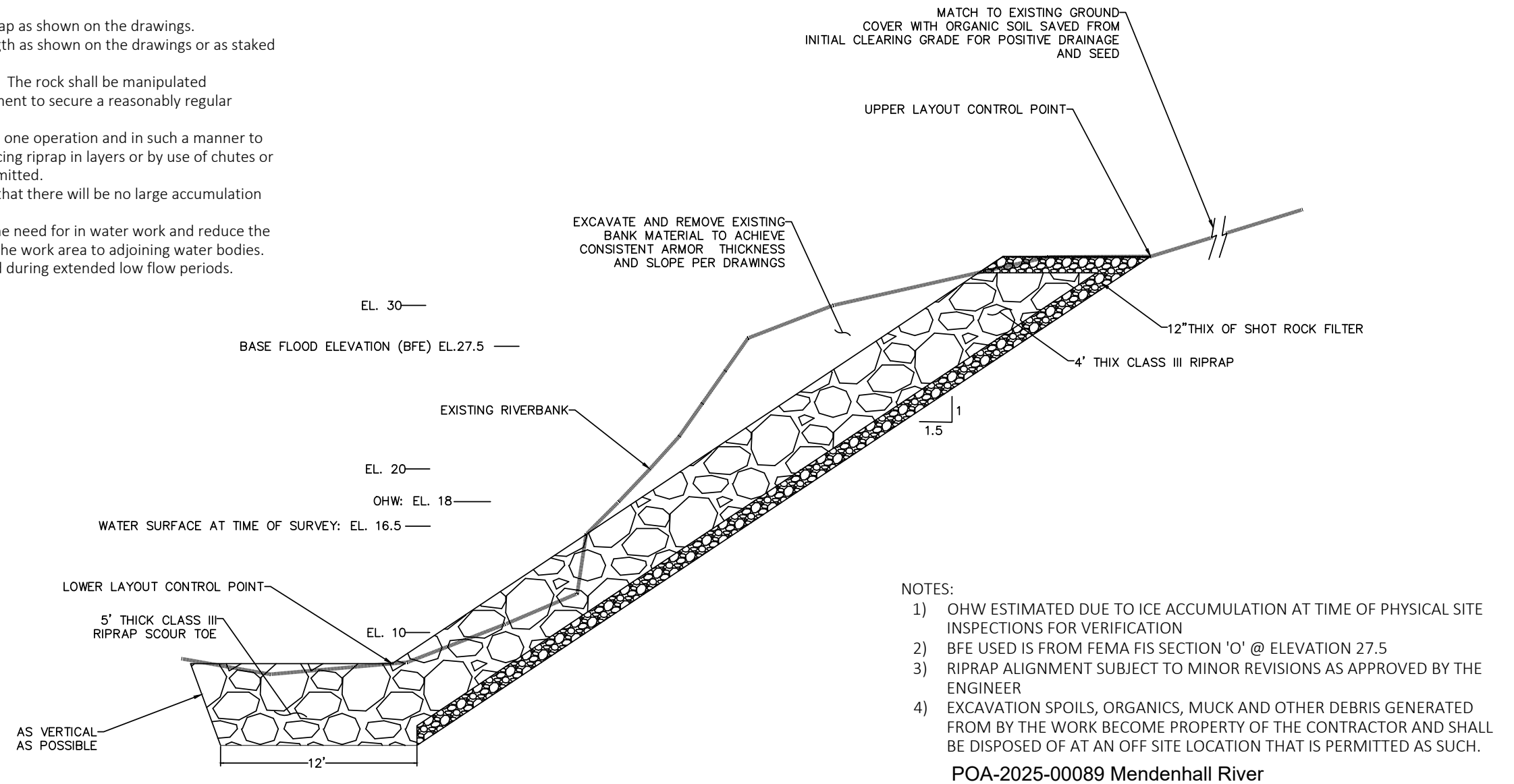
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**S. MEANDER ARMORING
TYPICAL SECTION**

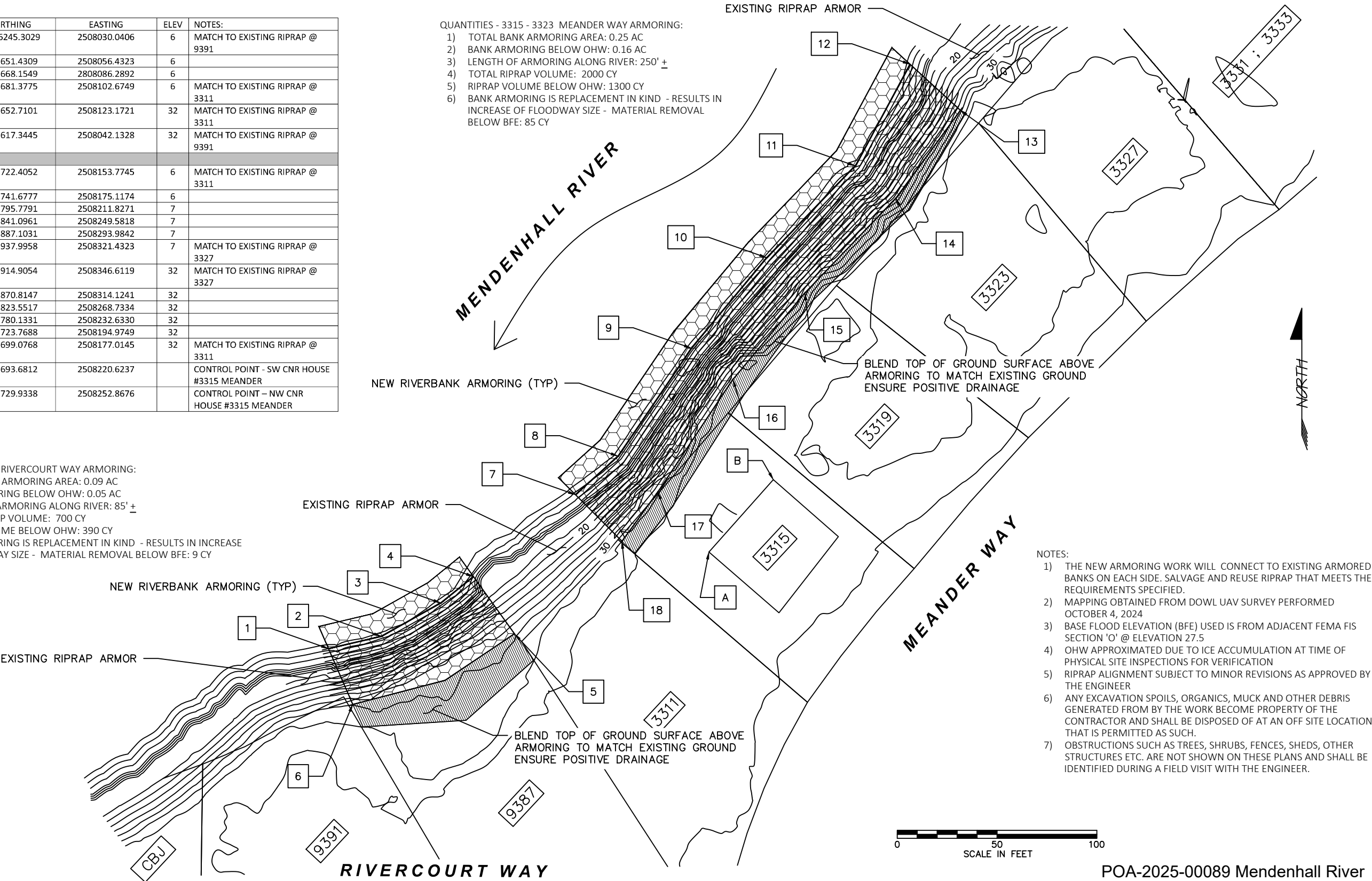
DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

SHEET:
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POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 85' ±
 - 4) TOTAL RIPRAP VOLUME: 700 CY
 - 5) RIPRAP VOLUME BELOW OHW: 390 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 2000 CY
 - 5) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:
7 of 7

13. Bank Stabilization

Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, stream barbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria:

- (a) No material is placed in excess of the minimum needed for erosion protection;
- (b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a bulkhead that is greater than 1,000 feet in length along the bank);
- (c) The activity will not exceed an average of one cubic yard per running foot, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;
- (f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas);
- (g) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization;
- (h) The activity is not a stream channelization activity; and
- (i) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This NWP authorizes those maintenance and repair activities if they require authorization.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. Appropriate

measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges of dredged or fill material into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of dredged or fill material of greater than an average of one cubic yard per running foot as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: In coastal waters and the Great Lakes, living shorelines may be an appropriate option for bank stabilization, and may be authorized by NWP 54.

2021 Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. *Navigation.* (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. *Aquatic Life Movements.* No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. *Spawning Areas.* Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. *Migratory Bird Breeding Areas.* Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

2021 Nationwide Permit General Conditions

5. *Shellfish Beds.* No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. *Suitable Material.* No activity may use unsuitable material (*e.g.*, trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. *Water Supply Intakes.* No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. *Adverse Effects From Impoundments.* If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. *Management of Water Flows.* To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (*e.g.*, stream restoration or relocation activities).

10. *Fills Within 100-Year Floodplains.* The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. *Equipment.* Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. *Soil Erosion and Sediment Controls.* Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. *Removal of Temporary Structures and Fills.* Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate.

2021 Nationwide Permit General Conditions

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”

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(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (*e.g.*, an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The

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word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. *Migratory Birds and Bald and Golden Eagles.* The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. *Historic Properties.* (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If preconstruction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance

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with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the preconstruction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

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(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/ THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. *Discovery of Previously Unknown Remains and Artifacts.* Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. *Designated Critical Resource Waters.* Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

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23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (*i.e.*, on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require preconstruction notification, the district engineer may determine on a case-by case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100 acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100 acre or less that require preconstruction notification, the district engineer may determine on a case-by case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the

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stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

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(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (*e.g.*, resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. *Safety of Impoundment Structures.* To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. *Water Quality.* (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived

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(see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires preconstruction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3 acre.

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(b) If one or more of the NWP's used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWP's cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2 acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. *Transfer of Nationwide Permit Verifications.* If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. *Compliance Certification.* Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

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(c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. *Activities Affecting Structures or Works Built by the United States.* If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. *Pre-Construction Notification.* (a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer’s receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is “no effect” on listed species or “no potential to cause effects” on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the

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permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification:* The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed activity;
- (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
- (4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. (ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs. (iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);
- (5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project

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site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

2021 Nationwide Permit General Conditions

(c) *Form of Pre-Construction Notification:* The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination:* (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the preconstruction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat

2021 Nationwide Permit General Conditions

conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of preconstruction notifications to expedite agency coordination.

ALASKA DISTRICT REGIONAL CONDITIONS
for the
2021 NATIONWIDE PERMITS (NWP)

The Alaska District Regulatory Office has issued the following Regional Conditions to ensure that activities authorized by NWPs in the Alaska District cause no more than minimal adverse environmental effects, individually and cumulatively. Before the Alaska District will verify an activity under one or more NWPs, the proposed activity must comply with the NWP terms and all applicable General and Regional Conditions.

APPLICABILITY: The following apply throughout the state of Alaska.

RESTRICTIONS:

Regional Condition A – Revoked Permits: The following NWPs are revoked within Alaska:

- 2. Structures in Artificial Canals
- 24. Indian Tribe or State Administered Section 404 Programs
- 30. Moist Soil Management for Wildlife
- 34. Cranberry Production Activities

Regional Condition B – Additional Pre-Construction Notification (PCN) Requirements

- 1. NWP 13, Bank Stabilization: In addition to the PCN requirements specified by NWP 13, a PCN is required for proposed bank stabilization projects in fresh water when the proposed methods and techniques are not included in the Streambank Revegetation and Protection: A Guide for Alaska Revised 2005 (Walter, Hughes and Moore, April 2005) (Guide) or its future revisions. The Guide is available at: <http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.main>.
- 2. A PCN is required for projects that qualify for NWPs 12, 57 (C), and 58 (D) within the Municipality of Anchorage.
- 3. NWP 48: A PCN is required for impacts to greater than 1/2 acre of special aquatic sites (wetlands, mudflats, vegetated shallows, coral reefs, etc.).
- 4. NWP 12, 57 (C), 58 (D). In addition to other triggers for the PCN, a PCN is required for projects located within permafrost soils identified using the appropriate soil survey or other appropriate data.

REGIONAL CONDITION C - Activities Involving Trenching

Trenches may not be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation.

Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non waters of the U.S. location. The backfilled trench shall achieve the pre-construction elevation, within a year of disturbance unless climatic conditions warrant additional time. The additional time must be approved by the Corps.

Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable.

REGIONAL CONDITION D - Site Revegetation for Projects with Ground Disturbing Activities

Re-vegetation of all disturbed areas within the project site shall begin as soon as site conditions allow and in the same growing season as the disturbance, unless climatic conditions warrant additional time. Topsoil (the outermost layer of soil, usually the top 2 – 8 inches) removed from the

construction area shall be separated and used for site rehabilitation. When backfilling, topsoil shall be placed as the top layer to provide a seed bed for regrowth. If topsoil is not available from the project site, local native soil material obtained from an approved site may be used. Species used for seeding and planting shall be certified seed sources free of invasive species and follow this order of preference: 1) species native to the site; 2) species native to the region; 3) species native to the state.

REGIONAL CONDITION E - Delineation of Project Footprint

Prior to commencement of construction activities within waters of the U.S., the permittee shall clearly identify the permitted limits of disturbance at the project site with highly visible markers (e.g. construction fencing, flagging, silt barriers, etc.). The permittee shall properly maintain such identification until construction is complete and the soils have been stabilized. The permittee is prohibited from conducting any unauthorized Corps-regulated activity outside of the permitted limits of disturbance (as shown on the permit drawings).

REGIONAL CONDITION F - Maintenance of Hydrology Patterns

Natural drainage patterns shall be maintained using appropriate methods. Excessive ponding or drying adjacent to fill areas shall indicate non-compliance with this condition.

REGIONAL CONDITIONS G, H, I AND J APPLY TO SPECIFIC NWPs

REGIONAL CONDITION G - NWP 40 Agricultural Activities

The following activities are not authorized by NWP 40: a. Installation, placement, or construction of drain tiles, ditches, or levees; and b. Mechanized land clearing or land leveling in wetlands within 300 feet of an anadromous water (anadromous water is defined by the state of AK see <https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive>).

REGIONAL CONDITION H - NWP 44 Mining Activities

Placer mining activities are excluded from coverage by NWP 44 (Mining Activities). Placer mining may be authorized by Regional General Permit POA-2014-00055-M1. In Alaska, NWP 44 may only authorize the following activities:

1. Hard rock mining within waters jurisdictional under only Section 404 of the Clean Water Act, not including trenching, drilling, or access road construction.
2. Temporary stockpiling of sand and gravel in waters of the U.S., limited to seasonally dewatered unvegetated sand/gravel bars. Stockpiles shall be completely removed and the area restored to pre-project contours within one year, in advance of seasonal ordinary high water events, or prior to equipment being removed from site, whichever occurs first.

REGIONAL CONDITION I – NWP 48, 55 (A), and 56 (B):

When an Aquatic Farm Lease is required from the Alaska Department of Natural Resources (ADNR) for a new or modified aquatic farm, the applicant must obtain and submit a copy of the ADNR preliminary decision with a Preconstruction Notification to the USACE.

REGIONAL CONDITION J – NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52:

The proposed NWP activity must not cause:

- 1) the loss of anadromous streambed, and/or
 - 2) the discharge of dredged or fill material into waterbodies, including wetlands, adjacent to and/or upstream of an anadromous waterbody;
- unless the district engineer issues a waiver by making a written determination concluding that these discharges will result in no more than minimal individual and cumulative adverse environmental effects.

**STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER**

Southeast Regional Land Office

ADL 109422

City and Borough of Juneau

Authorization for Development within an Existing Easement

AS 38.05.850

The Department of Natural Resources, Division of Mining, Land and Water (DNR-DMLW), herein known as Grantor, authorizes the City and Borough of Juneau (CBJ), herein known as Grantee, for development within the following state managed easement: ADL 109338.

Property Description:

Located along the Mendenhall River in Juneau, Alaska, on portions of DMLW-managed state land within the NW $\frac{1}{4}$ and SW $\frac{1}{4}$ of Section 19, Township 40 South, Range 66 East and the SE $\frac{1}{4}$ of Section 24, Township 40 South, Range 65 East, Copper River Meridian.

Background:

On August 5, 2023, a glacial outburst originating in Suicide Basin caused sudden, severe flooding of the Mendenhall River in Juneau, Alaska. On August 9, 2023, in response to the damage caused by the flooding, the Governor's Office issued a 30-day Emergency Declaration suspending Alaska statute and regulation-related provisions requiring authorization prior to the use of, or entry upon, state land under AS 26.23.020(g)(1) and (7). On September 8, 2023, the Department of Mining, Land and Water, Southeast Regional Office (DMLW-SERO) issued Regional Manager's Decision (RMD) ADL 109338. The decision granted a public easement in perpetuity on state land underlying the Mendenhall River to encompass subsequent revetment construction and erosion control activity.

On August 6, 2024, a second glacial outburst originating in Suicide Basin caused flooding along the Mendenhall River. In response to the damage caused by the flooding, the Governor's Office issued a 30-day Emergency Declaration the same day, August 6, 2024. On September 5, 2024, DMLW-SERO issued an amendment to RMD ADL 109338 consistent with the August 6, 2024, Emergency Declaration.

On February 18, 2025, CBJ submitted an application to DMLW-SERO, serialized as ADL 109422, requesting authorization for revetment construction and erosion control work within public easement ADL 109338 along the Mendenhall River.

Authorization:

Revetment construction, erosion control and mitigation activity, at three sites on state-owned land along the east bank of the Mendenhall River. The site-locations are identified as: Killewich Drive, North Meander Way, and South Meander Way. Construction consists of riverbank slope excavation, river bottom scouring, and installation of Class III riprap armor and filter rock to an

approximate thickness of five feet. The total length and volume of construction is estimated at 1,085 feet and 8,500 cubic yards. See Attachment 1 for the approved development diagram. Construction should follow the submitted plan and should any changes be made, DMLW-SERO should be notified immediately.

Approximate length and volume of construction at the site adjacent to Killewich Drive is estimated at 500 feet and 4,950 cubic yards. Approximate length and volume of construction at the site adjacent to North Meander Way is estimated at 250 feet and 1,540 cubic yards. Approximate length and volume of construction at the site adjacent to South Meander Way is estimated at 250 feet and 2,000 cubic yards.

This authorization does not create or convey a real property interest and as such is revocable, with or without cause. The term of this authorization corresponds to the term of state managed easement, ADL 109338, which is issued in perpetuity.

Correspondence concerning this authorization may be directed to the Department of Natural Resources, Division of Mining, Land and Water, Southeast Regional Office, P.O. Box 111020, Juneau, AK 99801-1020, (907) 465-3400.

I have read and understand all of the foregoing and attached stipulations. By signing this authorization, I agree to conduct the authorized activity in accordance with the terms and conditions of this authorization.

<u>John Bohan</u>	City Engineer	March 13, 2025	
Signature of Grantee or Authorized Representative	Title	Date	
<u>155 Heritage Way, Juneau AK 99801</u>			
Grantee's Address	City	State	Zip
<u>John Bohan - (907)586-0800 x-4188</u>			
Contact Person	Primary Phone	Alternate Phone	
<u>Mason Auger</u>	Natural Resource Manager II	3/13/2025	
Signature of Authorized State Representative	Title	Date	

Appeal

An eligible person affected by this decision may appeal to the DNR Commissioner per AS 44.37.011 and 11 AAC 02. Any appeal must be received within twenty (20) calendar days after issuance of this decision under 11 AAC 02.040. An eligible person must first appeal a decision to the Commissioner before seeking relief in superior court. The Alaska Court System establishes its own rules for timely appealing final administrative orders and decisions of the department.

Appeals may be mailed or hand-delivered to the DNR Commissioner's Office, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska, 99501; or faxed to (907)-269-8918; or sent by electronic mail to dnr.appeals@alaska.gov. Appeals must be accompanied by the fee established in 11 AAC 05.160(d)(1)(F), which has been set at \$200 under the provisions of 11 AAC 05.160 (a)-(b). A copy of 11 AAC 02 is available on the department's website at <https://dnr.alaska.gov/mlw/pdf/DNR-11-AAC-02.pdf>.

ADL 109422
Stipulations

1. **Authorized Officer:** The Authorized Officer (AO) for the State of Alaska (State), Department of Natural Resources (DNR), Division of Mining, Land and Water (DMLW), is the Regional Manager or designee.
2. **Change of Contact Information:** The Grantee shall maintain current contact information with the AO. Any change of contact information must be submitted in writing to the AO.
3. **Development Plan:** Development shall be limited to the authorized area and improvements specified in the approved development plan or subsequent modifications approved by the AO. The Grantee is responsible for accurately siting development and operations within the authorized area. Any proposed revisions to the development plan must be approved in writing by the AO before the change in use or development occurs.
4. **Survey:** The Grantee is required to contact DMLW Survey Section regarding development construction no less than one week upon signing of this authorization. Additional requirements may be required by the DMLW Survey Section prior to construction.
5. **Directives:** Directives may be issued for corrective actions that are required to correct a deviation from design criteria, project specifications, stipulations, State statutes or regulations. Work at the area subject to the Directive may continue while implementing the corrective action. Corrective action may include halting or avoiding specific conduct, implementing alternative measures, repairing any damage to state resources that may have resulted from the conduct, or other action as determined by DNR.
6. **Violations:** A violation of this authorization is subject to any action available to the State for enforcement and remedies, including revocation of the authorization, civil action for forcible entry and detainer, ejectment, trespass, damages, and associated costs, or arrest and prosecution for criminal trespass in the second degree. The State may seek damages available under a civil action, including restoration damages, compensatory damages, and treble damages under AS 09.45.730 or AS 09.45.735 for violations involving injuring or removing trees or shrubs, gathering geotechnical data, or taking mineral resources.
7. **Public Access:** The construction, operation, use, and maintenance of the authorized area shall not interfere with public use of roads, trails, waters, landing areas, and public access easements. The ability to use or access state land or public waters may not be restricted in any manner. However, if a specific activity poses a safety concern, the AO may allow the

restriction of public access for a specific period of time. The Grantee is required to contact the AO in advance for approval. No restriction is allowed unless specifically authorized in writing by the AO.

- 8. Public Trust Doctrine:** The Public Trust Doctrine guarantees public access to, and the public right to use, navigable and public waters and the land beneath them for navigation, commerce, fishing, and other purposes. This authorization is subject to the principles of the Public Trust Doctrine regarding navigable or public waters. The AO reserves the right to grant other interests consistent with the Public Trust Doctrine.
- 9. Valid Existing Rights:** This authorization is subject to all valid existing rights and reservations in and to the authorized area. The State makes no representations or warranties, whatsoever, either expressed or implied, as to the existence, number, or nature of such valid existing rights.
- 10. Site Maintenance:** The authorized area shall be maintained in a neat, clean, and safe condition, free of any solid waste, debris, or litter, except as specifically authorized herein. Nothing may be stored that would be an attractive nuisance to wildlife or create a potentially hazardous situation.
- 11. Maintenance of Improvements:** The Grantor is not responsible for maintenance of authorized improvements or liable for injuries or damages related to those improvements. No action or inaction of the Grantor is to be construed as assumption of responsibility.
- 12. Removal of Improvements and Site Restoration:** Upon termination of this authorization, whether by abandonment, revocation or any other means, the Grantee shall within 30 days remove all improvements from the area herein granted, except those owned by the State, and the site shall be restored to a condition acceptable to the AO. Should the Grantee fail or refuse to remove said structures or improvements within the time allotted, they shall revert to and become the property of the State; however, the Grantee shall not be relieved of the cost of the removal of the structures, improvements and/or the cost of restoring the area.
- 13. Amendment or Modification:** The Grantee may request an amendment or modification of this authorization; the Grantee's request must be in writing. Any amendment or modification must be approved by the AO in advance and may require additional fees and changes to the terms of this authorization.
- 14. Assignment:** This authorization may not be transferred or assigned.
- 15. Request for Information:** The AO, at any time, may require the Grantee to provide any information directly or indirectly related to this authorization, in a manner prescribed by the AO.

- 16. Inspections:** The AO shall have reasonable access to the authorized area for inspection, which may be conducted without prior notice. If the Grantee is found to be in noncompliance the authorized area may be subject to reinspection. The Grantee may be charged for actual expenses of any inspection.
- 17. Waste Disposal:** On-site refuse disposal is prohibited, unless specifically authorized. All waste generated during operation, maintenance, and termination activities under this authorization shall be removed and disposed of at an off-site DEC approved disposal facility. Waste, in this paragraph, means all discarded matter, including but not limited to human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and discarded equipment.
- 18. Surface Drainage:** Adequate culverts shall be installed to maintain surface drainage and to prevent ponding and/or erosion.
- 19. Site Disturbance:**
- a. Site disturbance shall be kept to a minimum to protect local habitats. All activities at the site shall be conducted in a manner that will minimize the disturbance of soil and vegetation and changes in the character of natural drainage systems.
 - b. Brush clearing is allowed but shall be kept to the minimum necessary to conduct or complete the authorized activity. Removal or destruction of the vegetative mat outside of the authorized area is not allowed.
 - c. Establishment of, or improvements to, tidal, submerged, shoreland or riparian landing areas (e.g.: leveling the ground, bank cutting or removing or modifying a substantial amount of vegetation) is prohibited without the prior written consent of the AO.
 - d. The Grantee shall conduct all operations in a manner which will prevent unwarranted pollution, erosion, and siltation. Any pollution, erosion, or siltation shall be repaired/remediated in a manner and time frame satisfactory to the AO at the Grantee's expense.
- 20. Ground Disturbance and Repair:** Grantee will refill holes, trenches and surface depressions resulting from development or maintenance activities with sand, gravel, native materials, or a substitute approved by the AO. Surface areas will be recontoured to the satisfaction of the AO so that they do not pose a threat to human safety or wildlife transit.
- 21. Destruction of Markers:** The Grantee shall protect all survey monuments, witness corners, reference monuments, mining claim posts, bearing trees, and unsurveyed corner posts against damage, destruction, or obliteration. The Grantee shall notify the AO of any damaged, destroyed, or obliterated markers and shall reestablish the markers at the Grantee's expense in accordance with accepted survey practices of the DMLW.
- 22. Insurance:** In accordance with 11 AAC 96.065, the requirements for insurance are met by the self-insurance of the applicant, as a political subdivision of the State. DMLW reserves the right to request insurance during the term of this authorization.

- 23. Incurred Expenses:** The Grantor shall in no way be held liable for expenses incurred by the Grantee connected with the activities directly or indirectly related to this authorization.
- 24. In Lieu of Indemnification:** In connection with the entry on or use of lands, subject to the limitations and provisions of AS 09.50.250-.270 and AS 37.05.170, the Grantee shall ensure that its contractors and subcontractors shall indemnify, save harmless, and defend the State, its agents and its employees from any and all claims or actions for injuries or damages sustained by any person or property arising directly or indirectly from the construction or the contractor's performance of the contract, except when the proximate cause of the injury or damage is the State's sole negligence.
- 25. Preference Right:** No preference right for subsequent authorizations are granted or implied by this authorization.
- 26. Alaska Historic Preservation Act:** The Alaska Historic Preservation Act, AS 41.35.200, prohibits the appropriation, excavation, removal, injury, or destruction of any state owned historic, prehistoric, archaeological or paleontological site without written approval from the DNR Commissioner. Should any sites be discovered, the Grantee shall cease any activities that may cause damage and immediately contact the AO and the Office of History and Archaeology in the Division of Parks and Recreation.
- 27. Compliance with Government Requirements:** The Grantee shall, at its expense, comply with all federal, state, and local laws, regulations, and ordinances directly or indirectly related to this authorization. The Grantee shall ensure compliance by its employees, agents, contractors, subcontractors, licensees, or invitees.
- 28. Waiver of Forbearance:** Any failure on the part of the AO to enforce the terms of this authorization, or the waiver of any right under this authorization by the Grantee, unless in writing, shall not discharge or invalidate the authorization of such terms. No forbearance or written waiver affects the right of the AO to enforce any terms in the event of any subsequent violations of terms of this authorization.
- 29. Severability Clause:** If any clause or provision of this authorization is, in a final judicial proceeding, determined illegal, invalid, or unenforceable under present or future laws, then the Grantor and the Grantee agree that the remainder of this authorization will not be affected, and in lieu of each clause or provision of this authorization that is illegal, invalid, or unenforceable, there will be added as a part of this authorization a clause or provision as similar in terms to the illegal, invalid, or unenforceable clause or provision as may be possible, legal, valid, and enforceable.
- 30. Fire Prevention, Protection and Liability:** The Grantee shall take all reasonable precautions to prevent and suppress forest, structure, brush and grass fires, and shall assume full liability for any damage to state land and structures resulting from the negligent use of fire. The State is not liable for damage to the Grantee's personal property

and is not responsible for forest fire protection of the Grantee's activity. To report a wildfire, call 911 or 1-800-237-3633.

31. Notification of Discharge: The Grantee shall immediately notify the Department of Environmental Conservation (DEC) and AO of any unauthorized discharge of any amount of oil to water, a discharge of any amount of a hazardous substance (other than oil), and any discharge of oil greater than 55 gallons on land. All fires and explosions must also be reported immediately.

If a discharge, including a cumulative discharge, of oil is greater than 10 gallons but less than 55 gallons, or a discharge of oil greater than 55 gallons is made to an impermeable secondary containment area, the Grantee shall report the discharge within 48 hours. Any discharge of oil greater than one gallon up to 10 gallons, including a cumulative discharge, solely to land, must be reported in writing on a monthly basis.

Notification of discharge must be made to DEC online at ReportSpills.alaska.gov or by phone at 1-800-478-9300.

Notification of discharge must be made to the appropriate DNR Office, preferably by e-mail: Anchorage email dnr.scro.spill@alaska.gov, (907) 269-8528; Fairbanks email dnr.nro.spill@alaska.gov, (907) 451-2739; Juneau email dnr.sero.spill@alaska.gov, (907) 465-3513. The Grantee shall supply the AO with all incident reports submitted to DEC.

32. Fuel and Hazardous Substances: No fuel or hazardous substances may be stored on state land.

33. Forest Resources: Site preparation and development work such as clearing must be performed in a reasonable manner that is commensurate with the scope of your project. Any materials such as trees that are disturbed in the course of development are the property of the underlying landowner and should be handled according to the landowner's instructions.

34. Termination: The authorization remains in effect for the term issued, unless revoked sooner. The department will give 30 days' notice before revoking an authorization at will. A revocation for cause is effective immediately.

35. Other Authorizations: The issuance of this authorization does not alleviate the necessity of the Grantee to obtain authorizations required by other agencies for this activity.

Attachments:

1. Approved Development Diagram



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0020

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Frank and Mimi Mesdag
3847/3849 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39084 N, 134.58915 W

Dear Frank and Mimi Mesdag:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



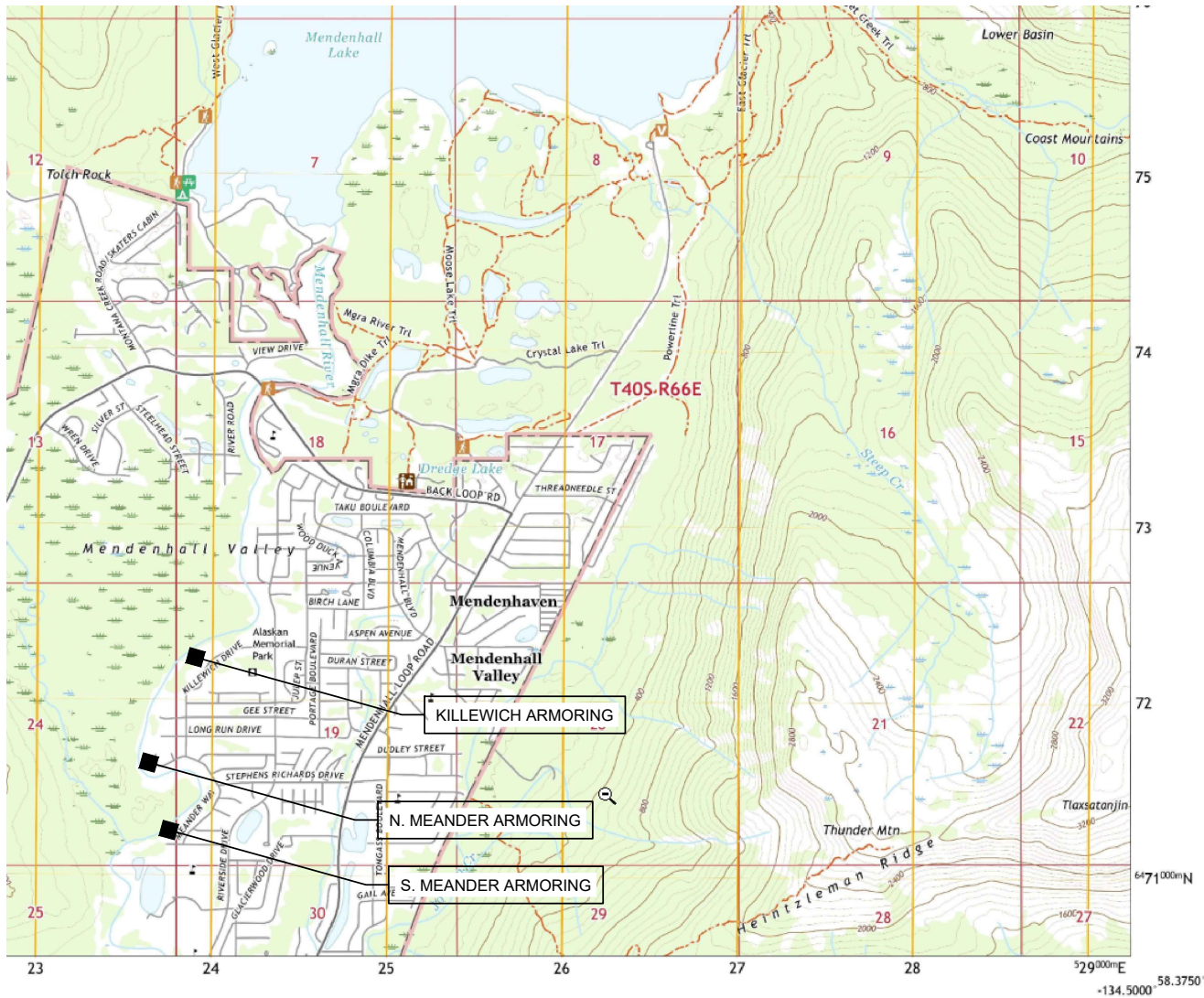
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
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- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND
LOCATION MAP

DATE: Feb 2025

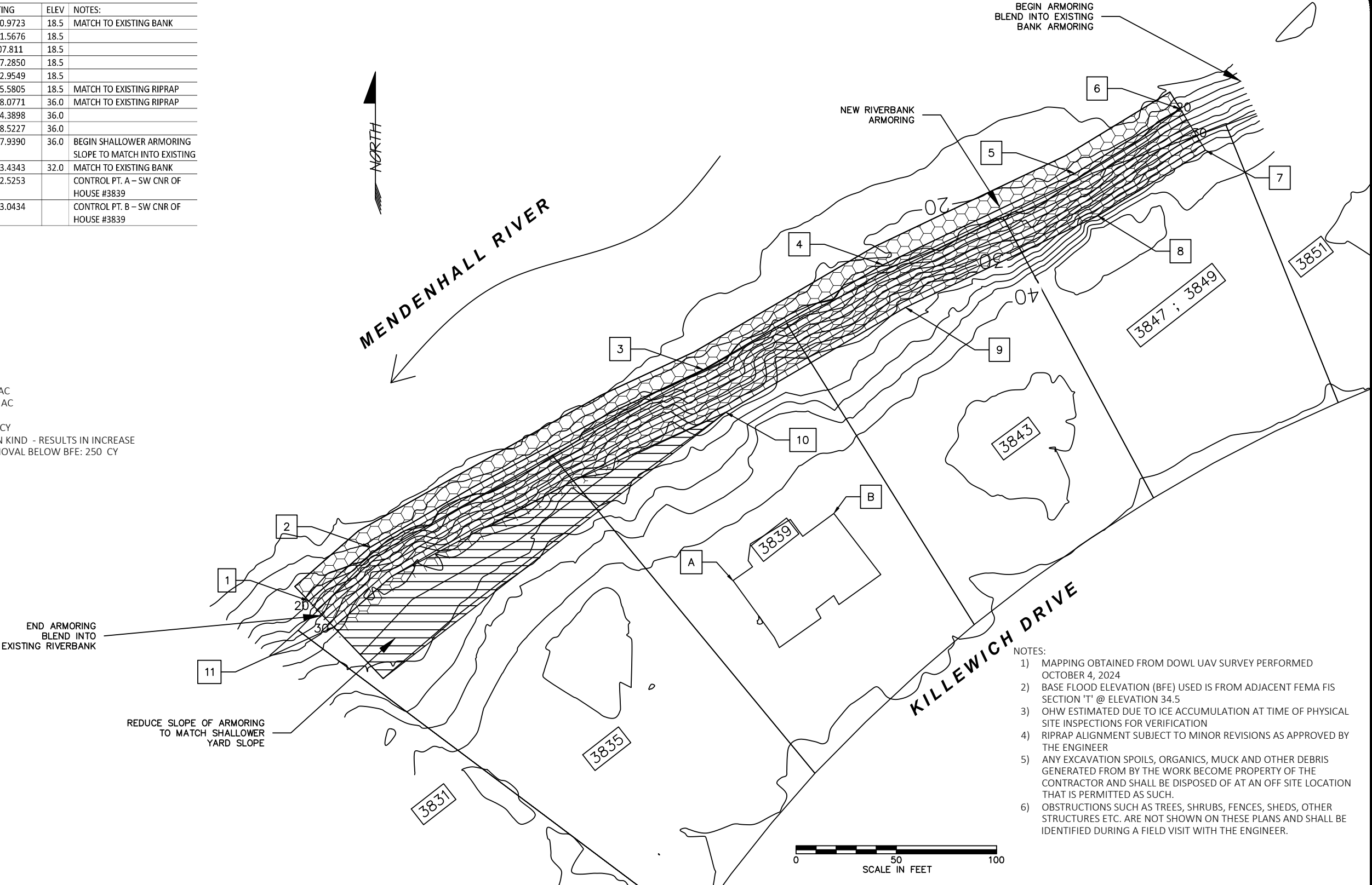
DRAWN BY: STAFF

SCALE: As Shown

SHEET:
1 of 7

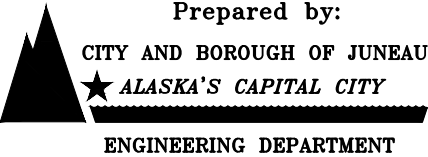
LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
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- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) TOTAL RIPRAP VOLUME: 4,950 CY
 - 4) RIPRAP VOLUME BELOW OHW: 2210CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250' CY



- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
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 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

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2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

KILLEWICH ARMORING
CONSTRUCTION PLAN

DATE: 2/1/2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

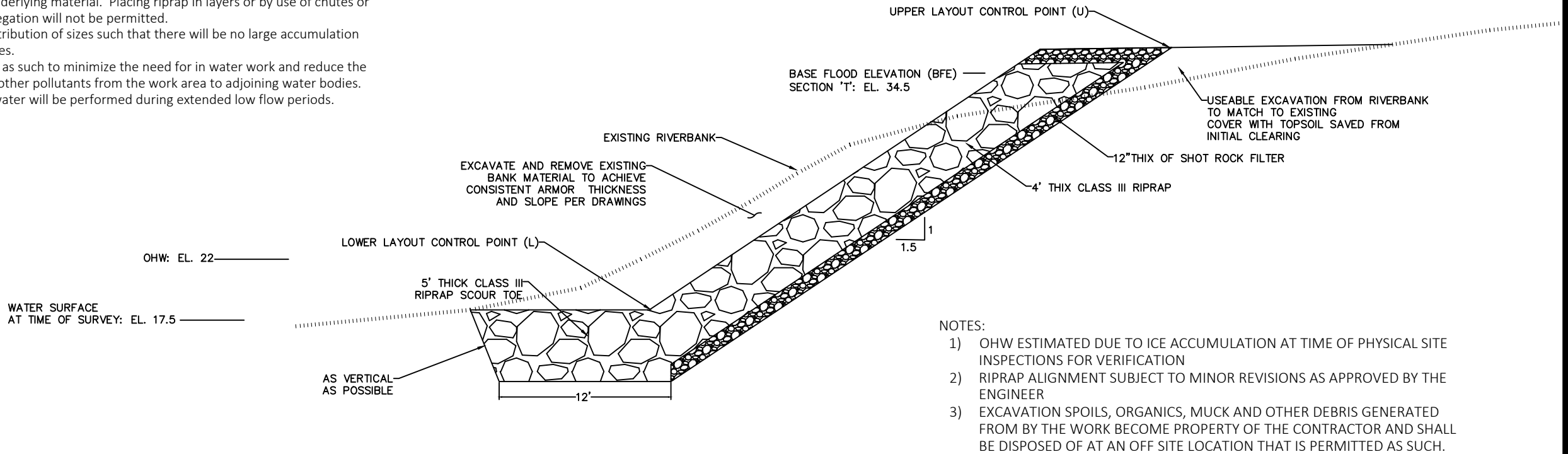
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
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Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
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SHEET:
2 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0021

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Scott Gende and Amy Reifenstein
3843 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39066 N, 134.58962 W

Dear Scott Gende and Amy Reifenstein:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



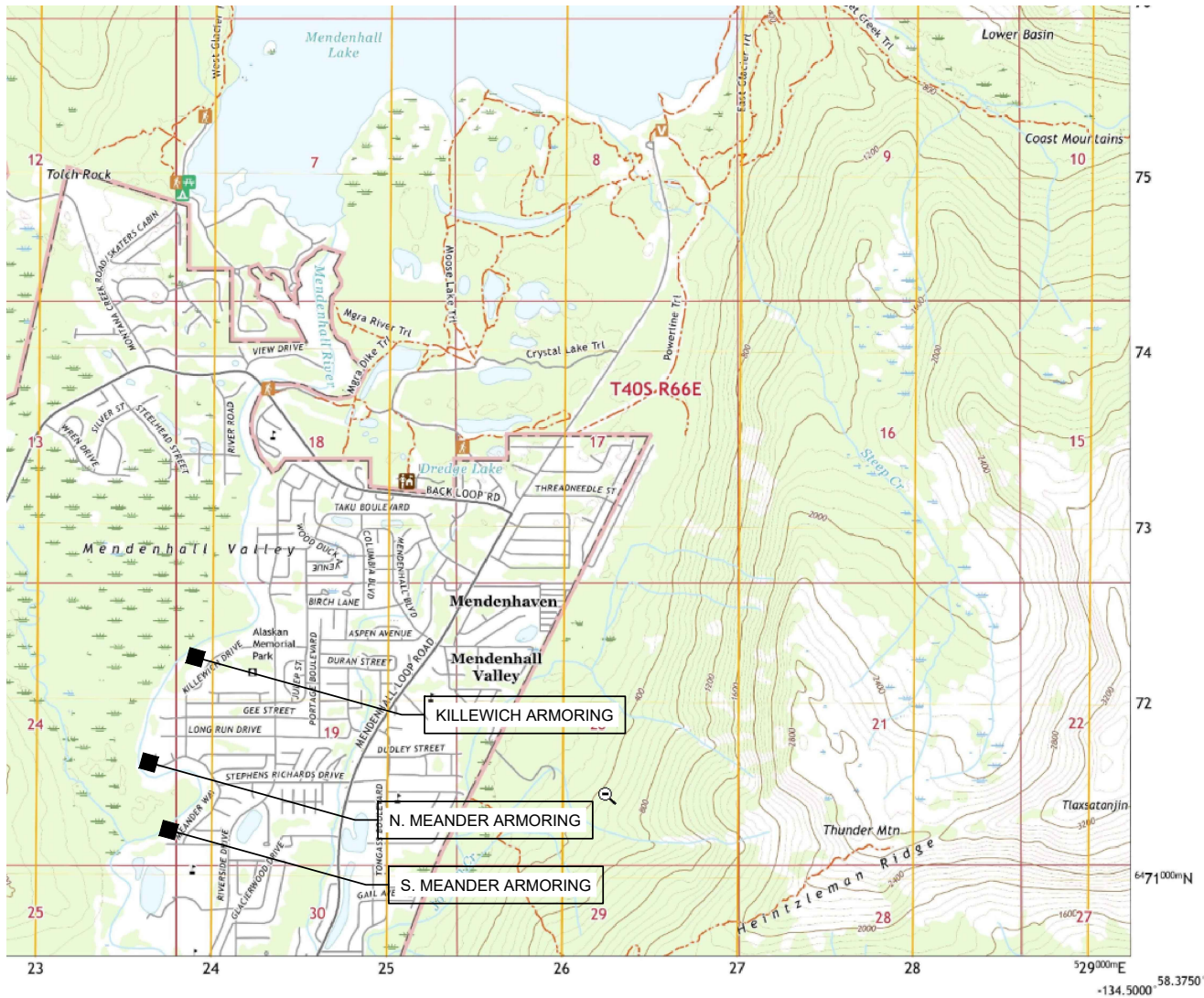
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2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
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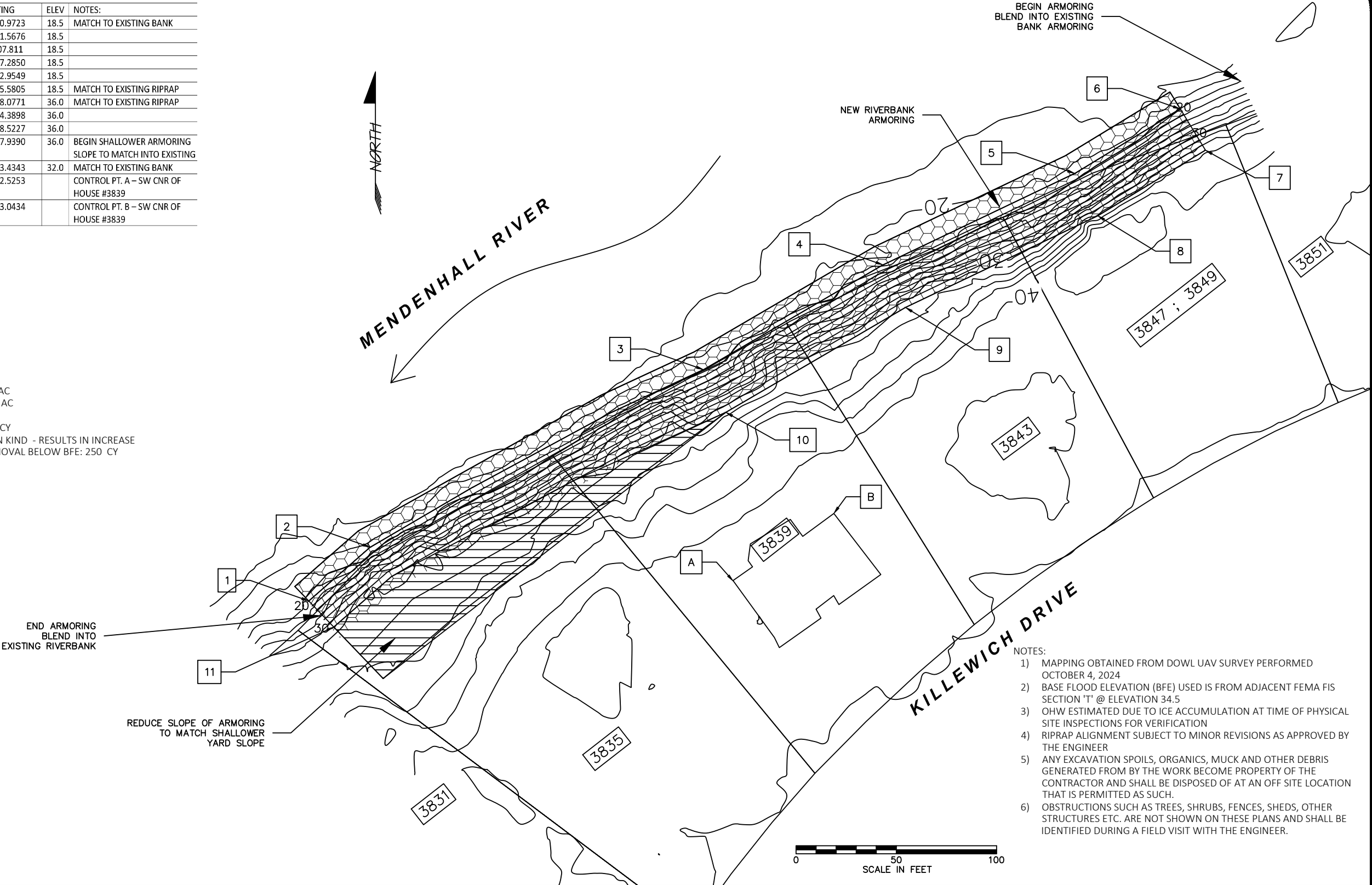
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DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

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ENGINEERING DEPARTMENT

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FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

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3 of 7

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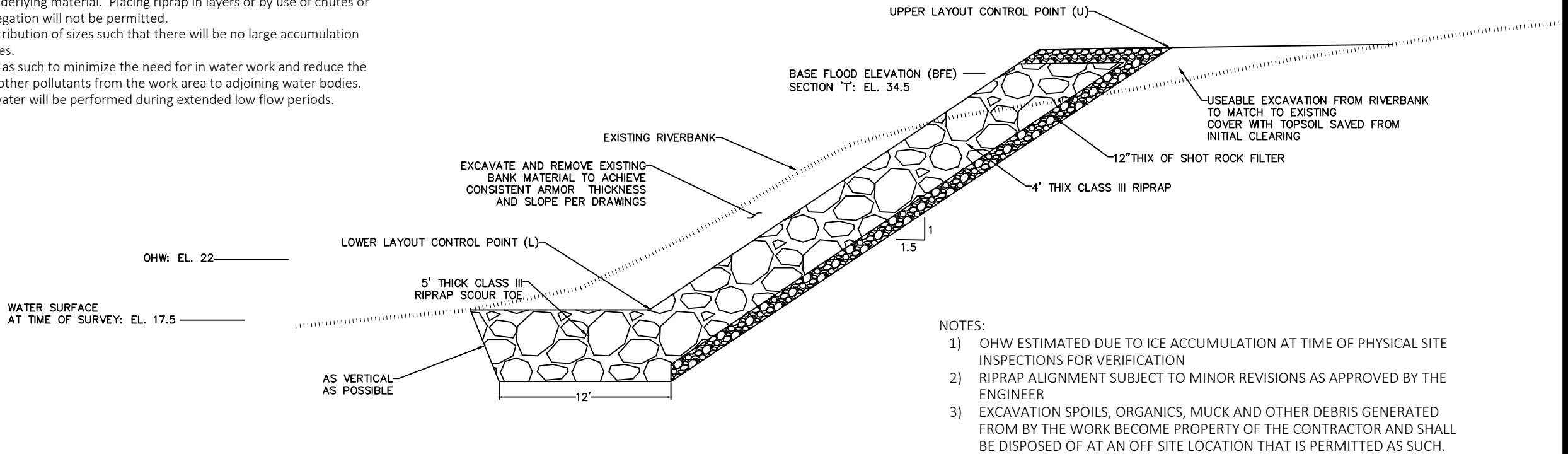
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DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
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THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0022

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Jonathan and Brooke Gunstrom
3839 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39048 N, 134.59022 W

Dear Jonathan and Brook Gunstrom:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

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In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

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You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

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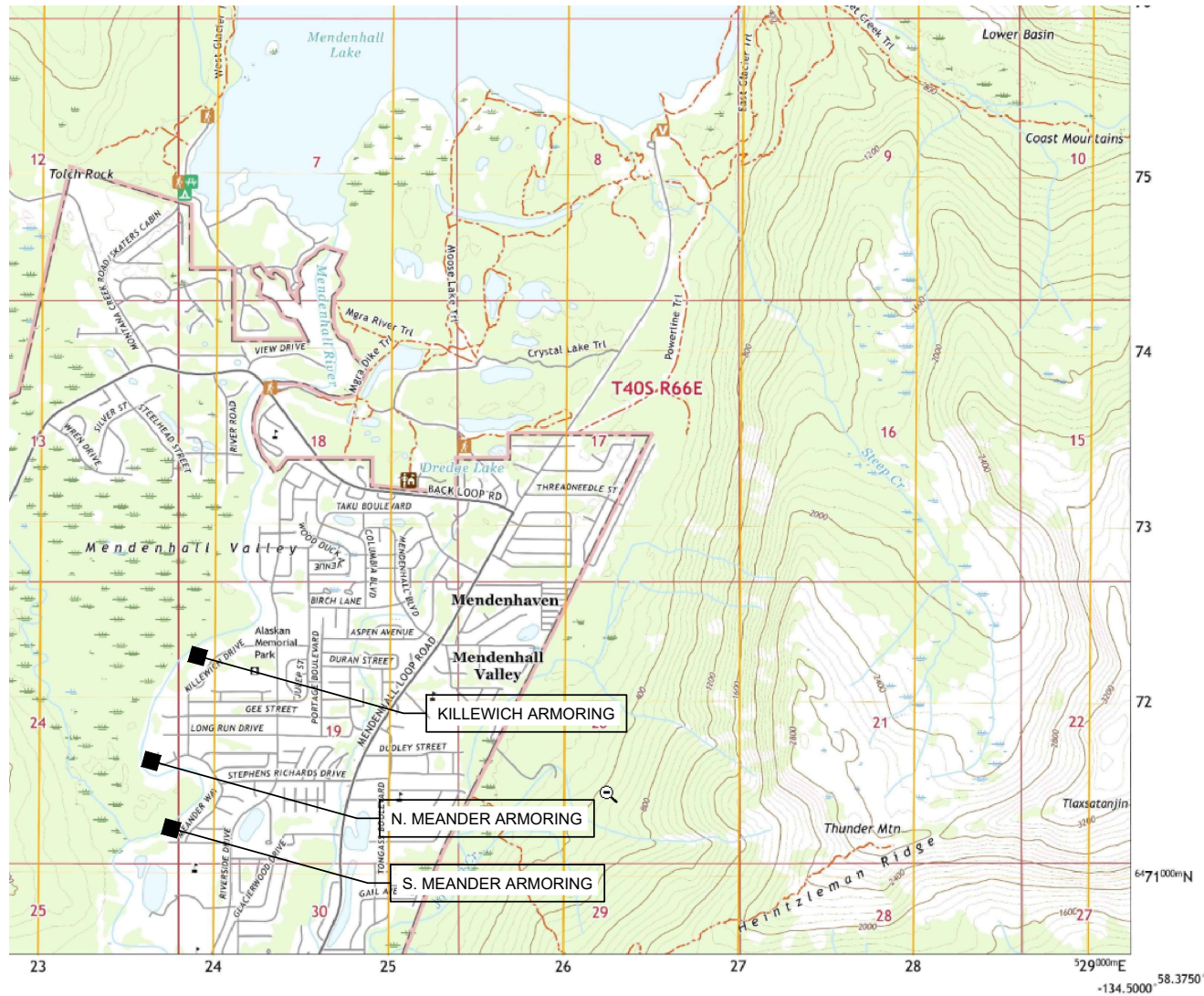
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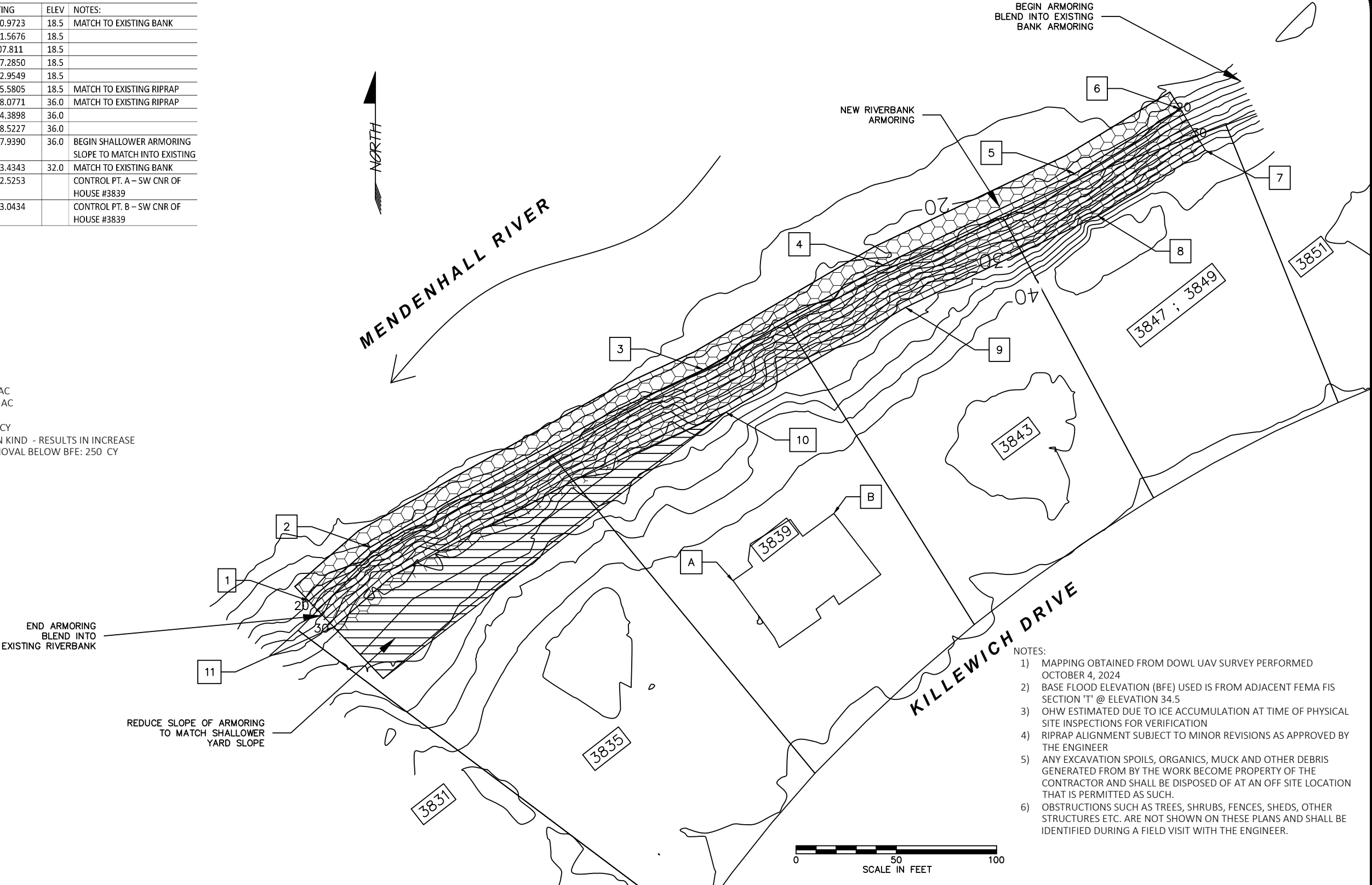
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RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) TOTAL RIPRAP VOLUME: 4,950 CY
 - 4) RIPRAP VOLUME BELOW OHW: 2210CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY



- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

KILLEWICH ARMORING
CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:
3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

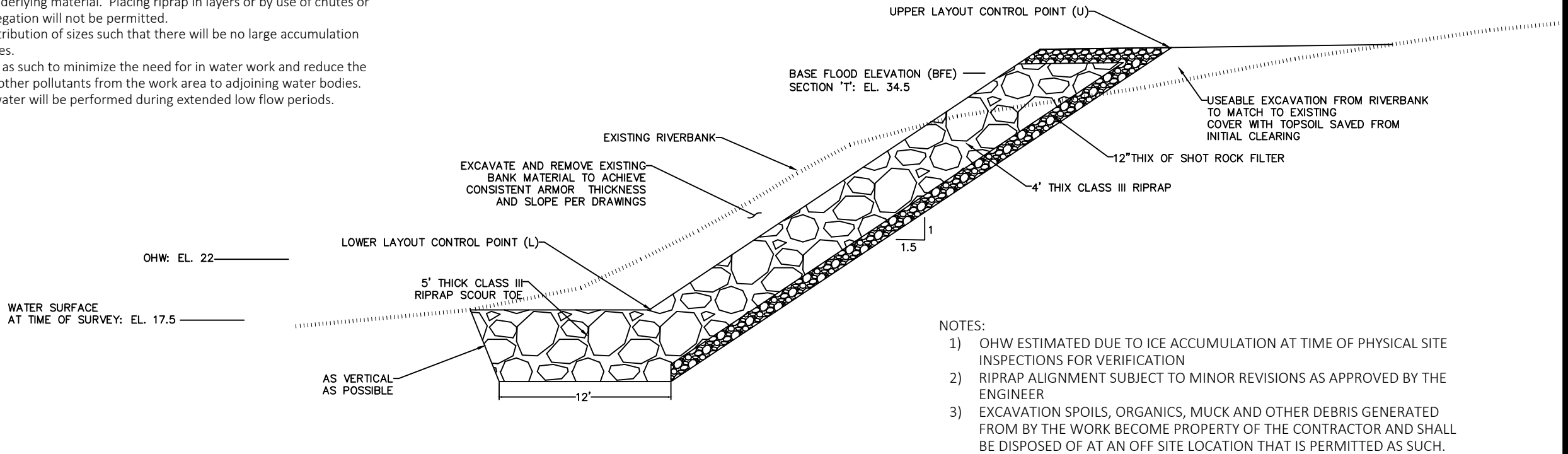
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0023

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Mike and Bonnie Erickson
3835 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39028 N, 134.59075W

Dear Mike and Bonnie Erickson:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the active flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



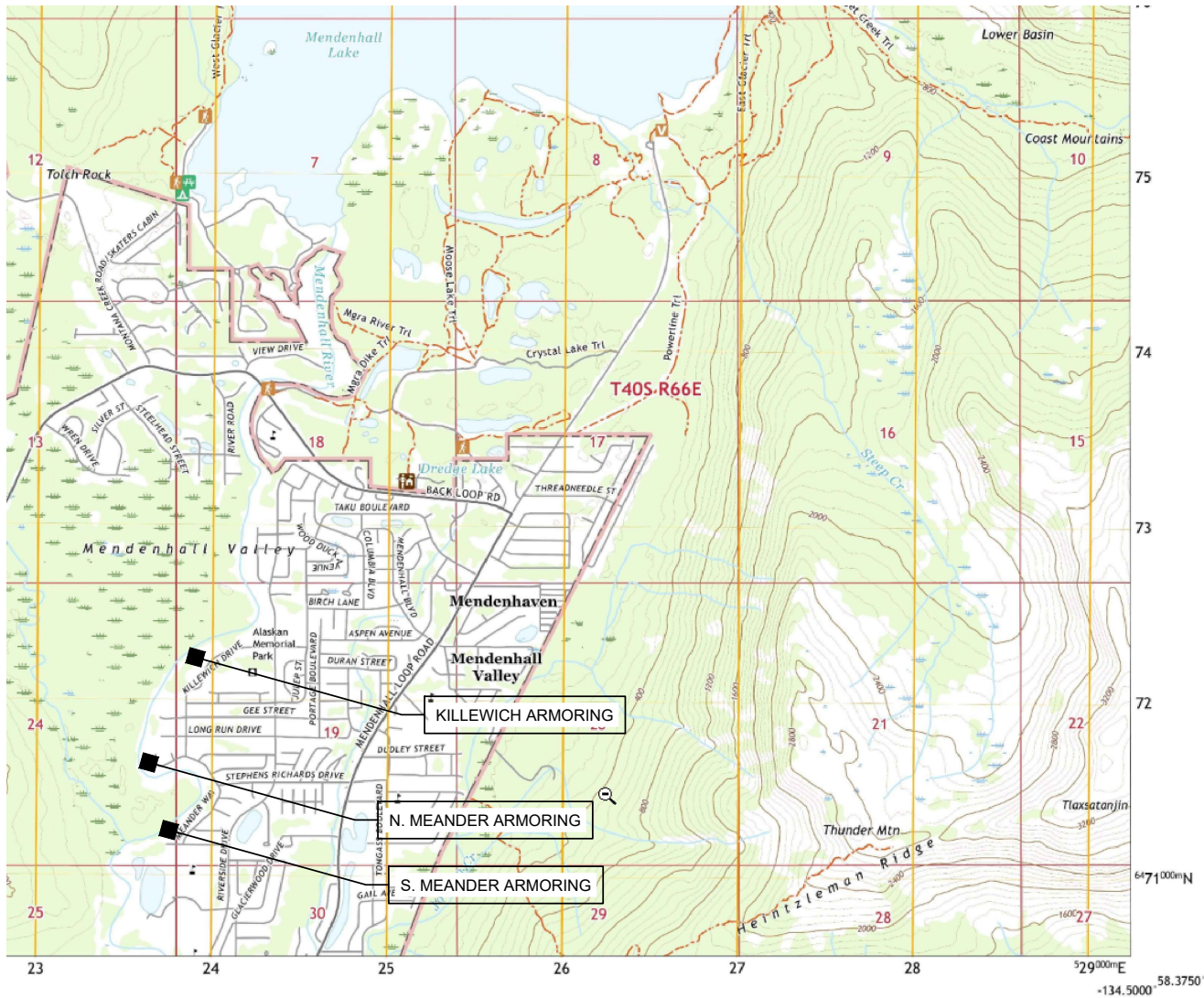
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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2	- KILLEWICH ARMORING TYPICAL SECTION
3	- KILLEWICH ARMORING CONSTRUCTION PLAN
4	- N. MEANDER ARMORING TYPICAL SECTION
5	- N. MEANDER ARMORING CONSTRUCTION PLAN
6	- S. MEANDER ARMORING TYPICAL SECTION
7	- S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

Revisions		
Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

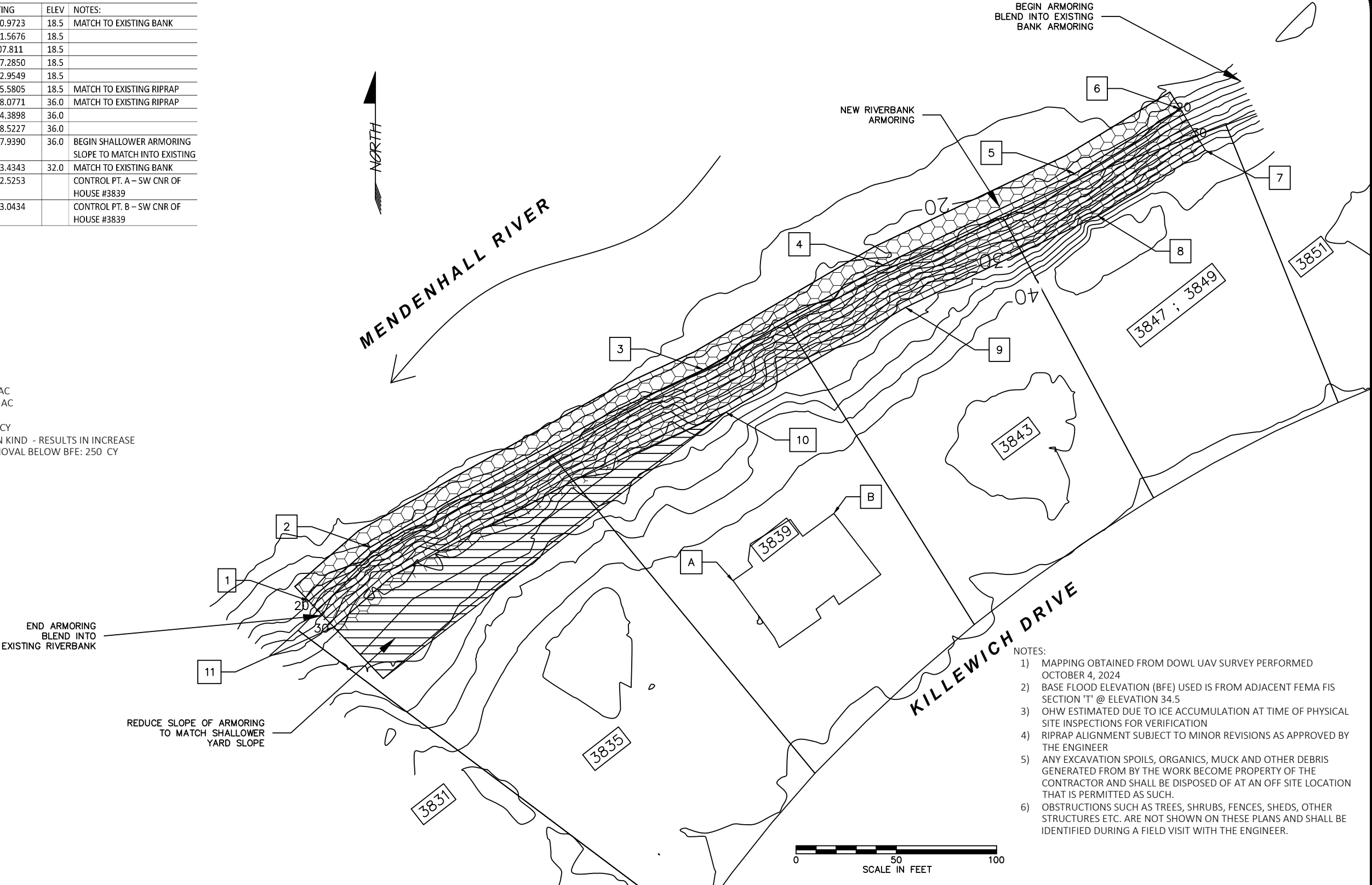
2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

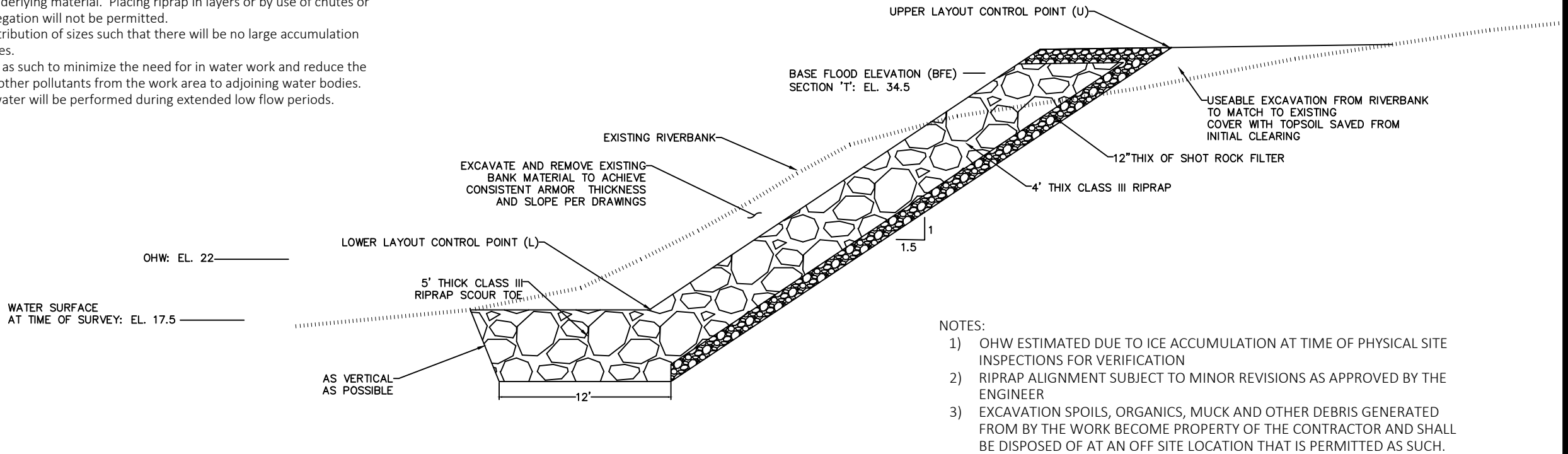
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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
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THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0024

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Kevin and Gabriella Tillotson
3499 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 24, T 40S, R 65E, CRM (Juneau B-2)
Location: 58.38506 N, 134.59593 W

Dear Kevin and Gabriella Tillotson:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

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^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

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In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



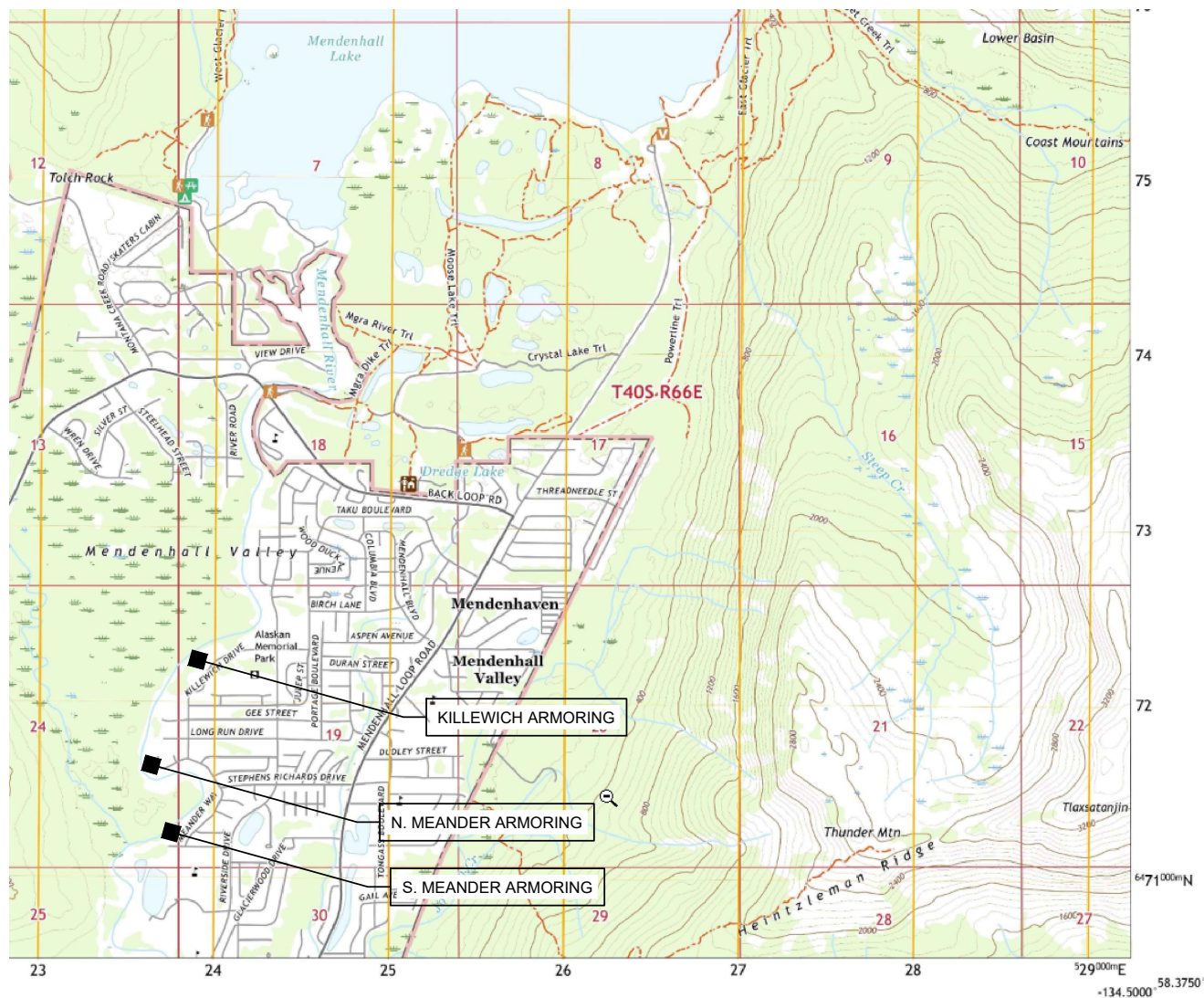
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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7	- S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

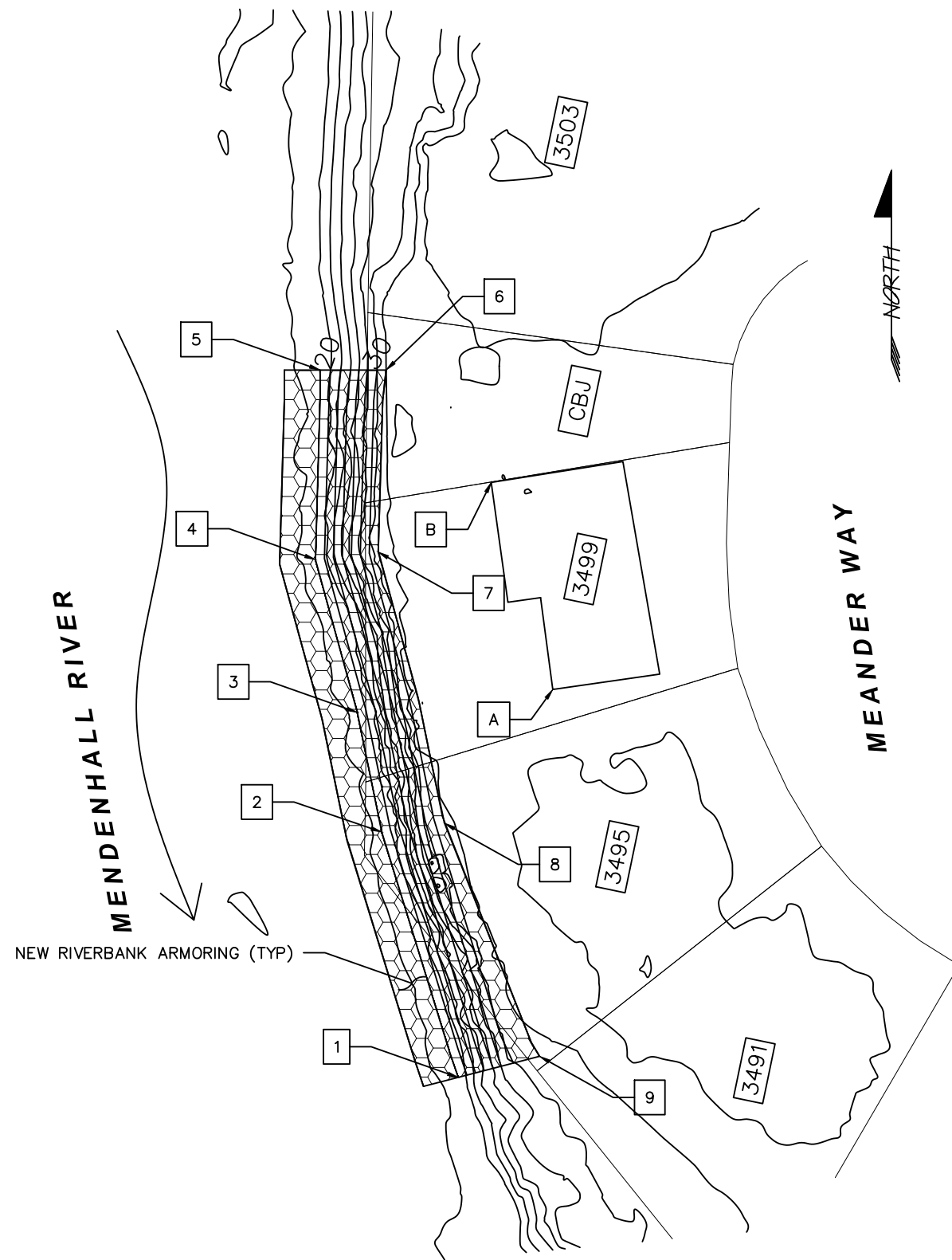
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
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3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.						

DATE: Feb 2025

DRAWN BY: STAFF

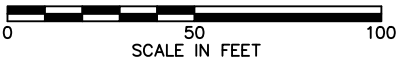
SCALE: As Shown

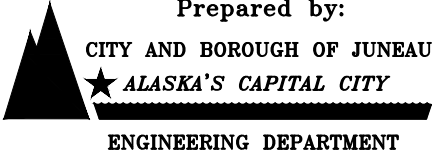


- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) TOTAL RIPRAP VOLUME: 1540 CY
 - 4) RIPRAP VOLUME BELOW OHW: 770 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 7 CY

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2393896.5525	2507610.8681	18.0	Match TO EXISTING BANK
2	2393978.9938	2507585.2101	18.0	
3	2394019.0284	2507577.0045	18.0	
4	2394070.3146	2507562.9437	18.0	
5	2394133.9212	2507564.5190	18.0	MATCH TO EXISTING RIPRAP
6	2394133.9212	2507586.6734	32.0	MATCH TO EXISTING RIPRAP
7	2394072.8377	2507584.0270	32.0	
8	2393981.8148	2507606.2823	32.0	
9	2393903.6179	2507638.1839	32.0	MATCH TO EXISTING BANK
A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT - NW CNR HOUSE #3499

- NOTES:
- 1) THIS WORK WILL BE TO RECONSTRUCT AN EXISTING RIPRAP ARMORED BANK. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS ELEVATION 30.4. THIS HAS BEEN INTERPOLATED BETWEEN FEMA SECTIONS 'Q' AND 'R'
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING		N. MEANDER ARMORING CONSTRUCTION PLAN		SHEET: 5 of 7
Date	Description	Intls.						
			DATE: Feb 2025		DRAWN BY: STAFF	SCALE: As Shown		

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

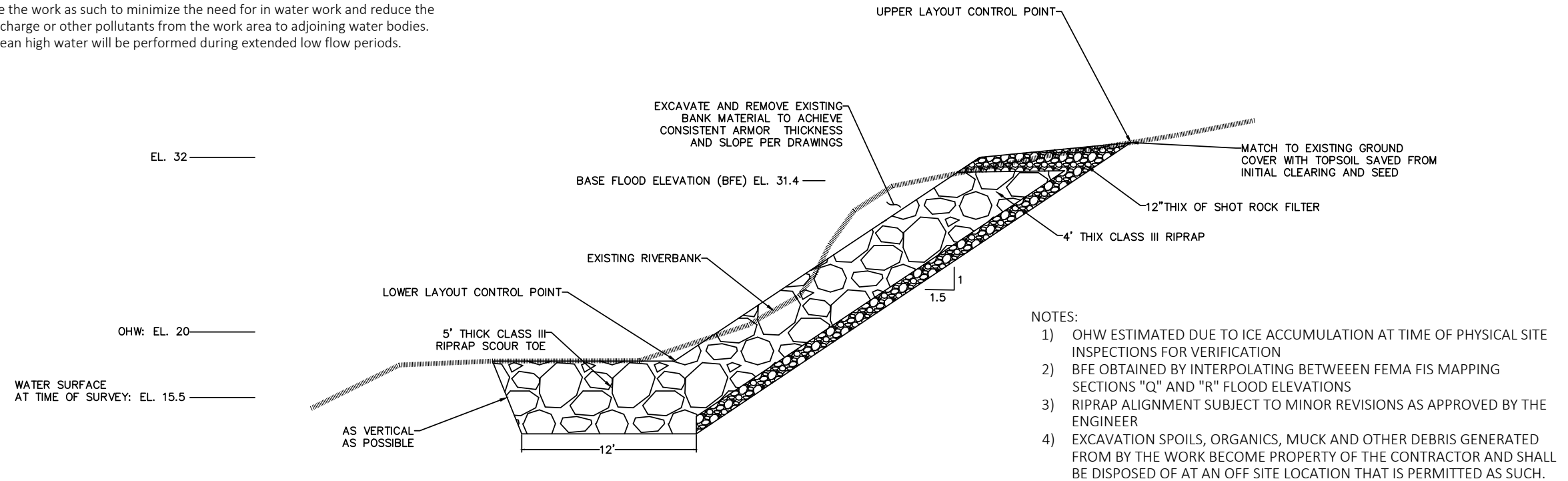
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**N. MEANDER ARMORING
TYPICAL SECTION**

DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

SHEET:
4 of **7**



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0025

ISSUED: March 11, 2025
EXPIRES: Life of Structure

John and Alyson Cooper
3495 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 24, T 40S, R 65E, CRM (Juneau B-2)
Location: 58.38478 N, 134.59575 W

Dear John and Alyson Cooper:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



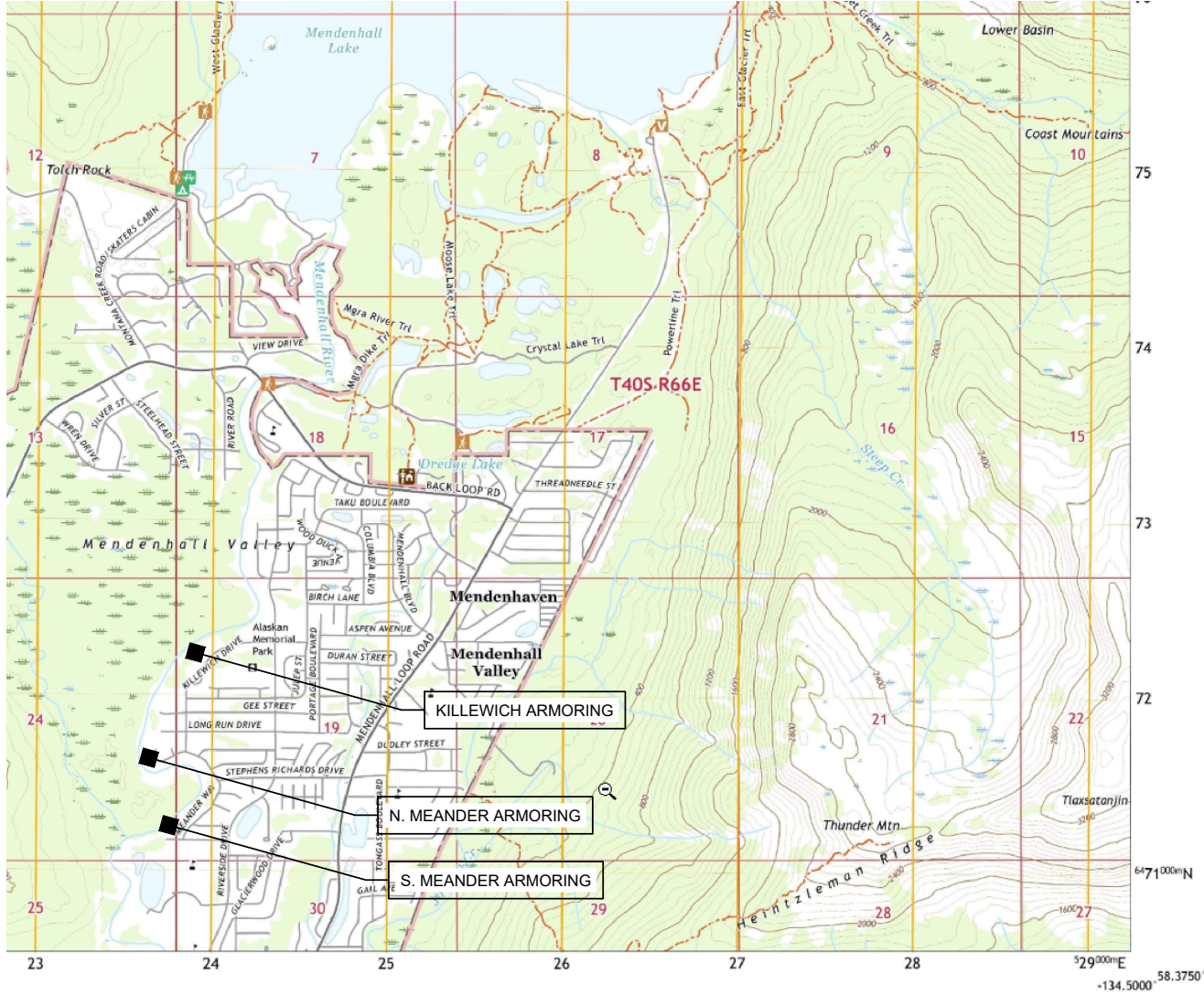
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
John Bohan, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.

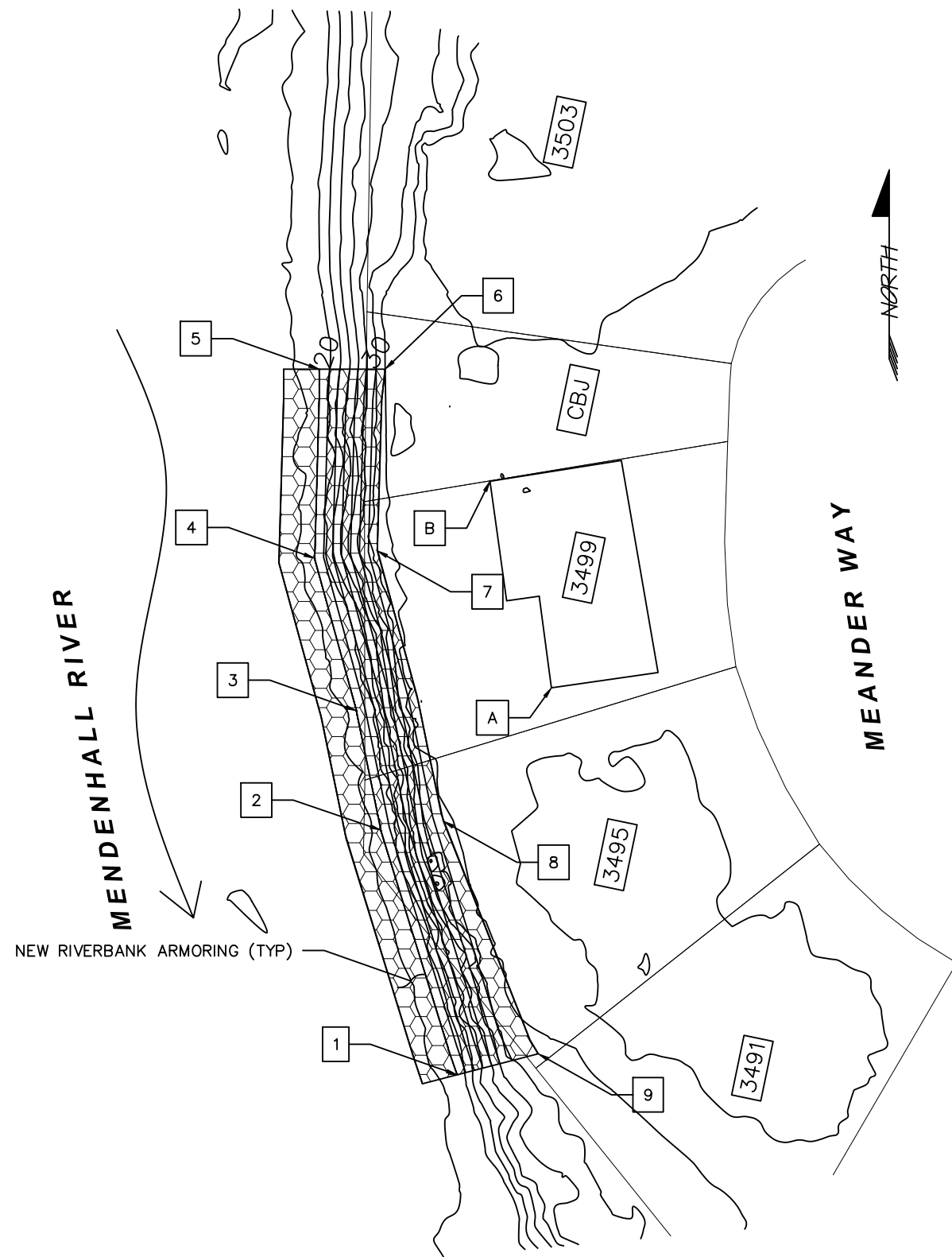


Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

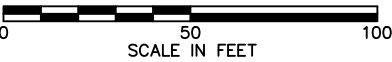
SHEET:
1 of 7



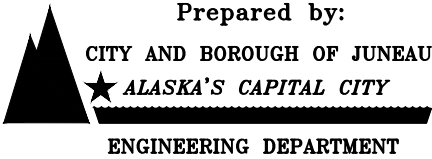
- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) TOTAL RIPRAP VOLUME: 1540 CY
 - 4) RIPRAP VOLUME BELOW OHW: 770 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 7 CY

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2393896.5525	2507610.8681	18.0	Match TO EXISTING BANK
2	2393978.9938	2507585.2101	18.0	
3	2394019.0284	2507577.0045	18.0	
4	2394070.3146	2507562.9437	18.0	
5	2394133.9212	2507564.5190	18.0	MATCH TO EXISTING RIPRAP
6	2394133.9212	2507586.6734	32.0	MATCH TO EXISTING RIPRAP
7	2394072.8377	2507584.0270	32.0	
8	2393981.8148	2507606.2823	32.0	
9	2393903.6179	2507638.1839	32.0	MATCH TO EXISTING BANK
A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT - NW CNR HOUSE #3499

- NOTES:
- 1) THIS WORK WILL BE TO RECONSTRUCT AN EXISTING RIPRAP ARMORED BANK. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS ELEVATION 30.4. THIS HAS BEEN INTERPOLATED BETWEEN FEMA SECTIONS 'Q' AND 'R'
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

N. MEANDER ARMORING CONSTRUCTION PLAN		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
5 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

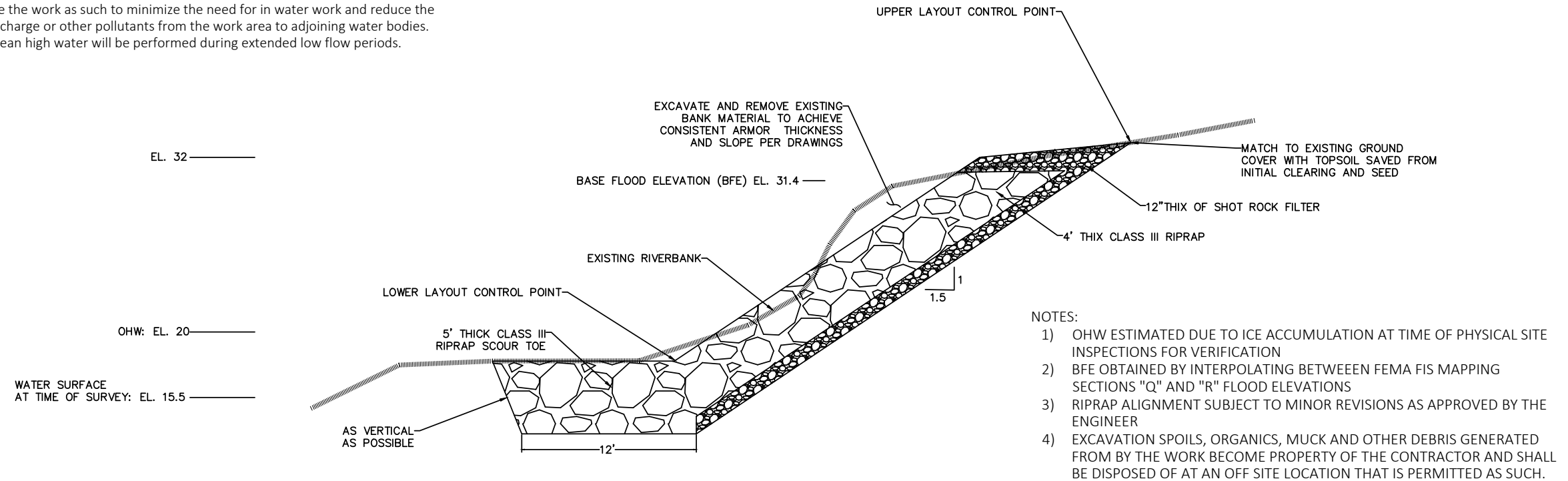
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**N. MEANDER ARMORING
TYPICAL SECTION**

DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

SHEET:
4 of **7**



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0026

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Brian and Kimberly Goettler
3323 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38179 N, 134.59197 W

Dear Brian and Kimberly Goettler:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



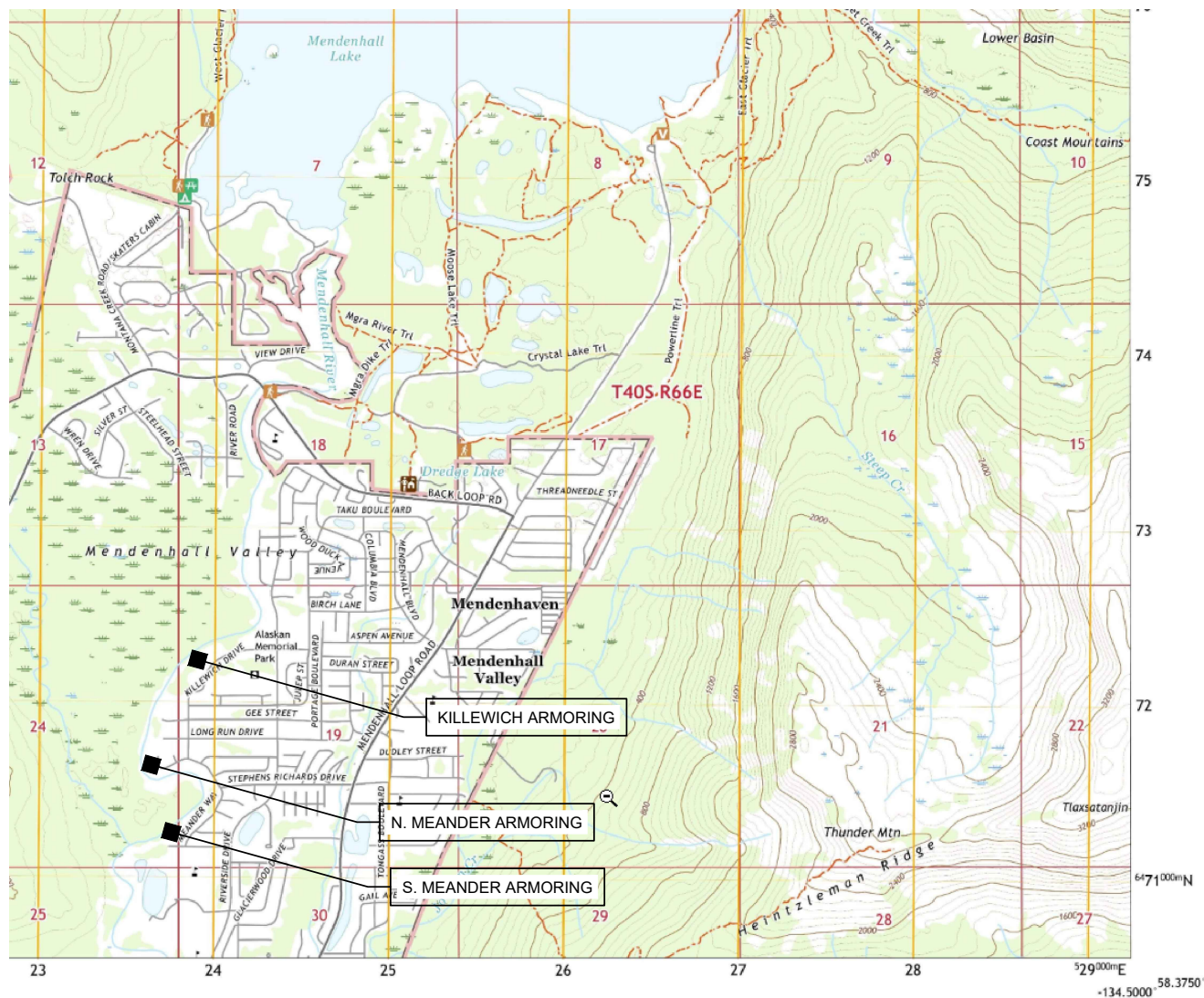
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING		COVER AND LOCATION MAP		SHEET: 1 of 7
Date	Description	Intls.						

DATE: Feb 2025

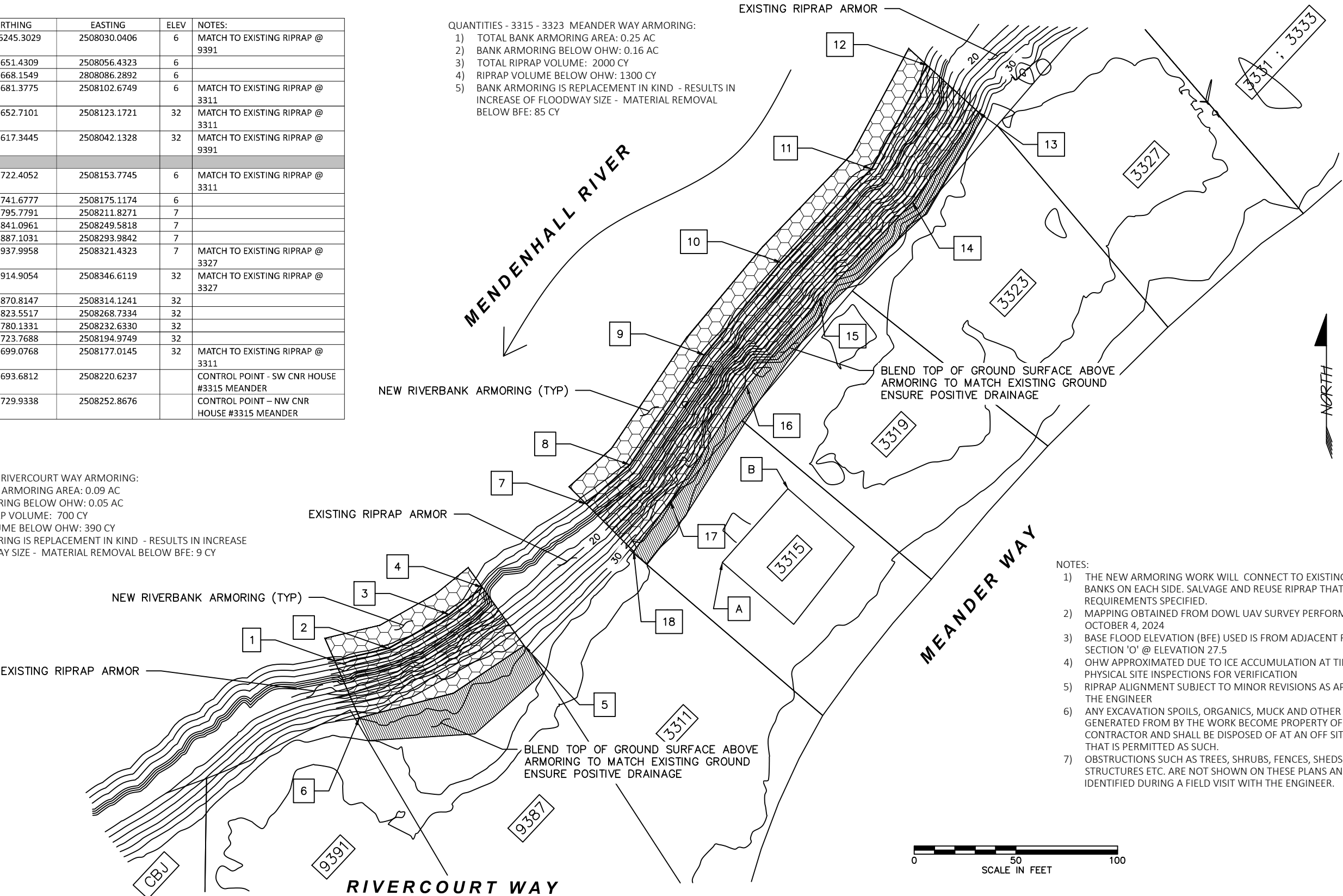
DRAWN BY: STAFF

SCALE: As Shown

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) TOTAL RIPRAP VOLUME: 700 CY
 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) TOTAL RIPRAP VOLUME: 2000 CY
 - 4) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions

Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

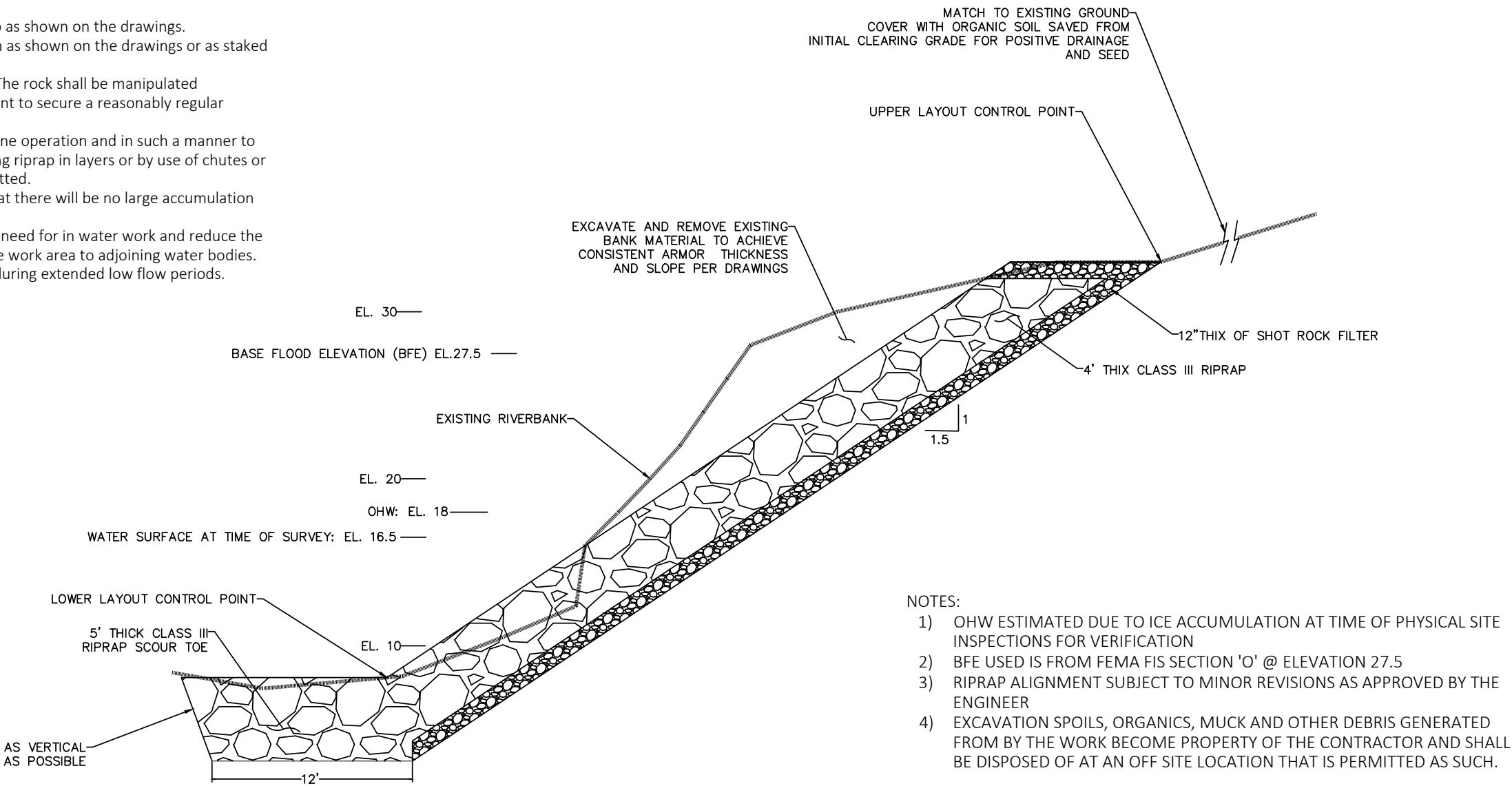
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0027

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Harvey and Pamela Hergett
3319 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38162 N, 134.59228 W

Dear Harvey and Pamela Hergett:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



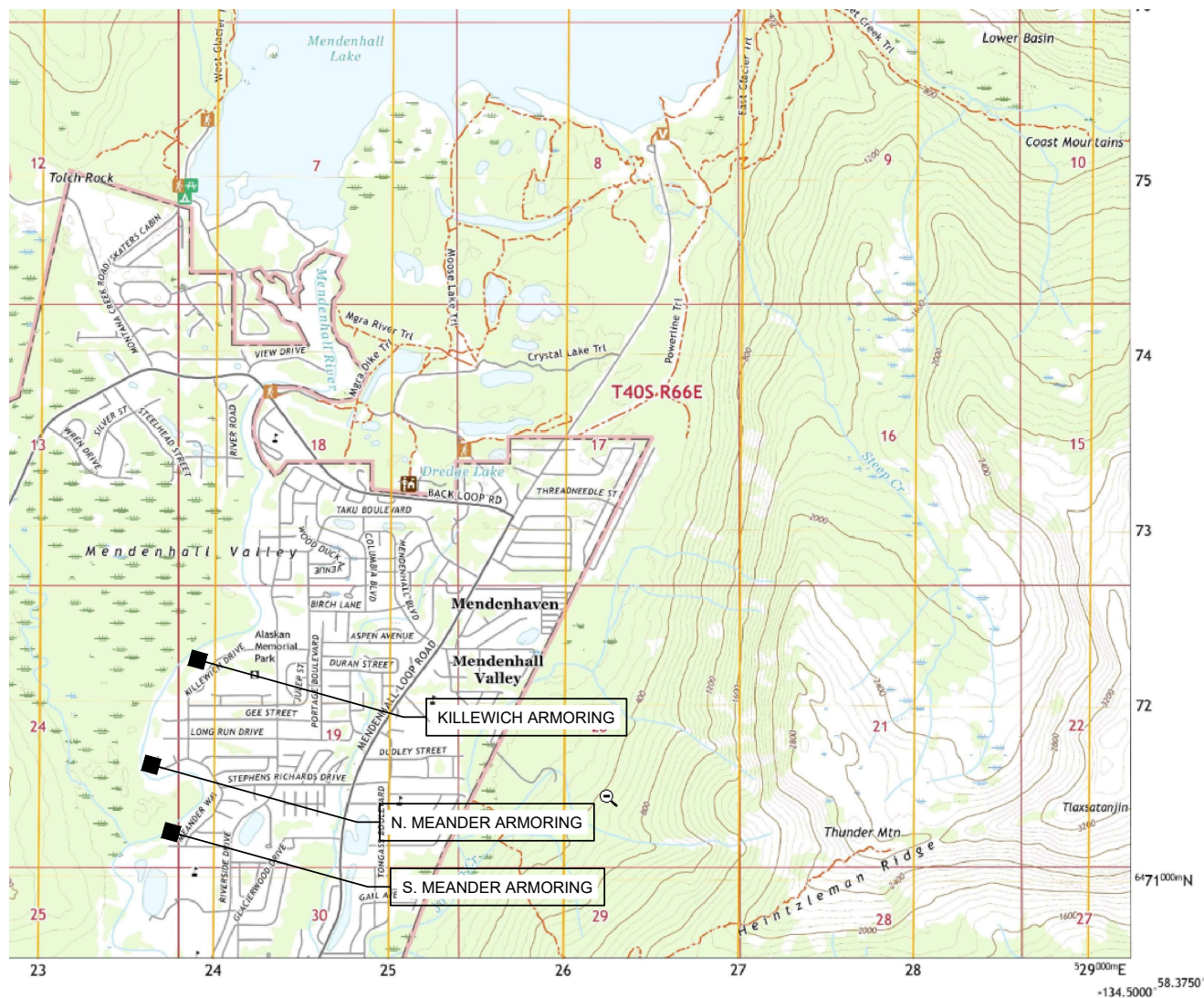
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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4	- N. MEANDER ARMORING TYPICAL SECTION
5	- N. MEANDER ARMORING CONSTRUCTION PLAN
6	- S. MEANDER ARMORING TYPICAL SECTION
7	- S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

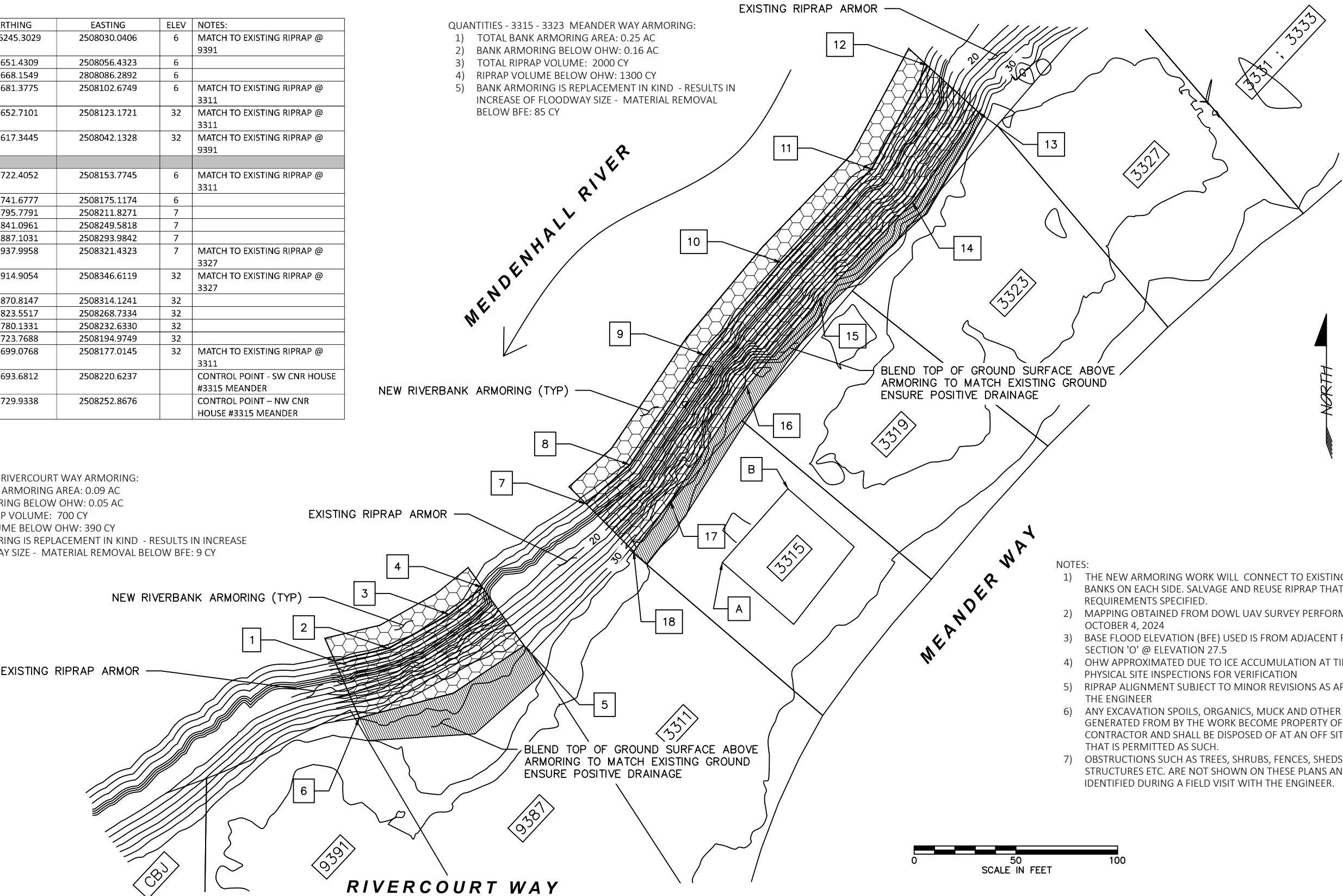
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.						

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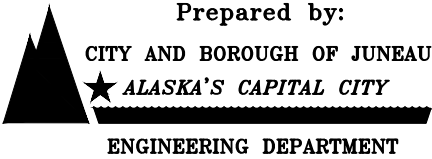
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 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

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 - 4) RIPRAP VOLUME BELOW OHW: 1300 CY
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- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
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 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.



2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

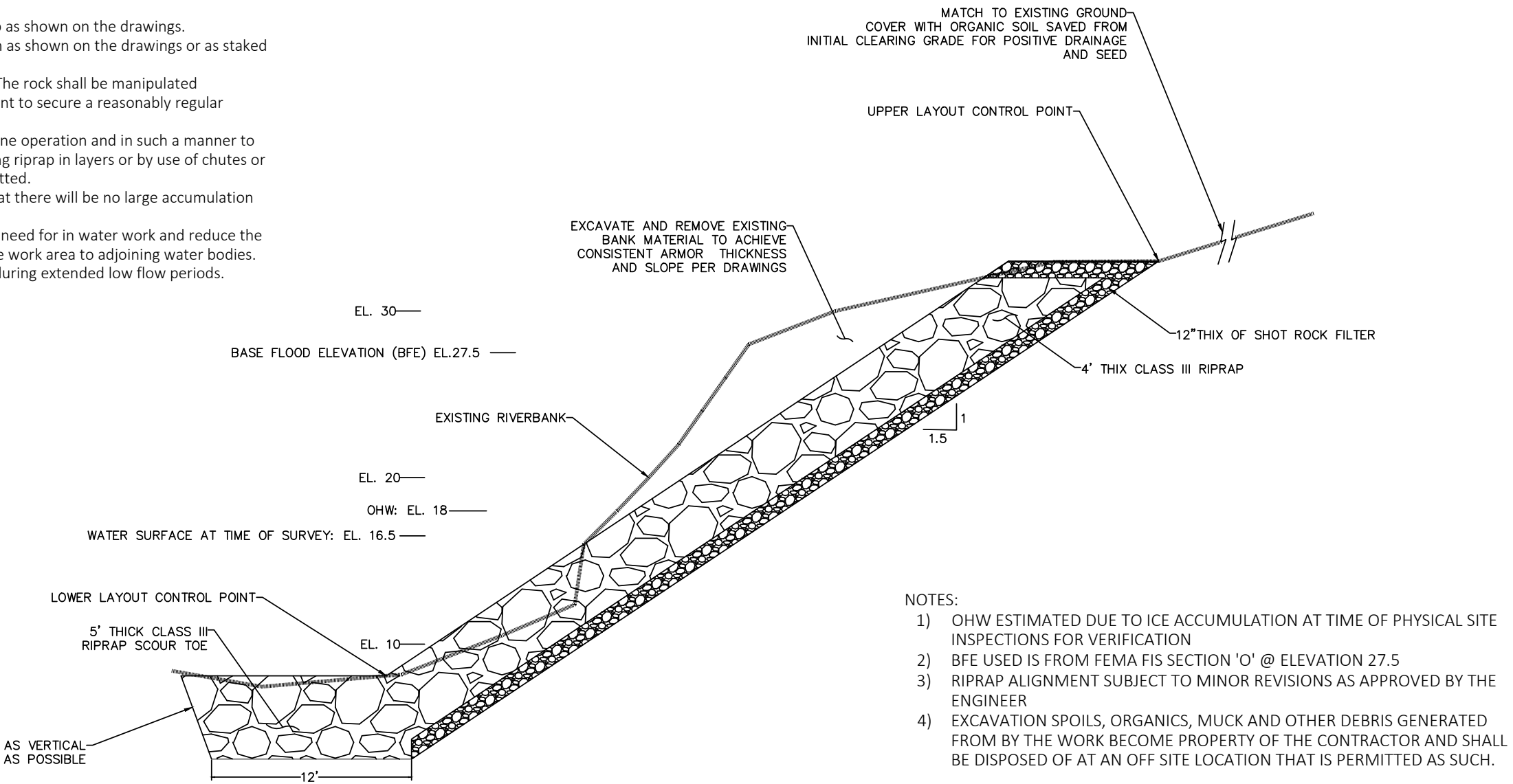
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

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- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) BFE USED IS FROM FEMA FIS SECTION 'O' @ ELEVATION 27.5
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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0028

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Christine and Adam Shaw
3315 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38143 N, 134.59258 W

Dear Christine and Adam Shaw:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

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^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

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You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



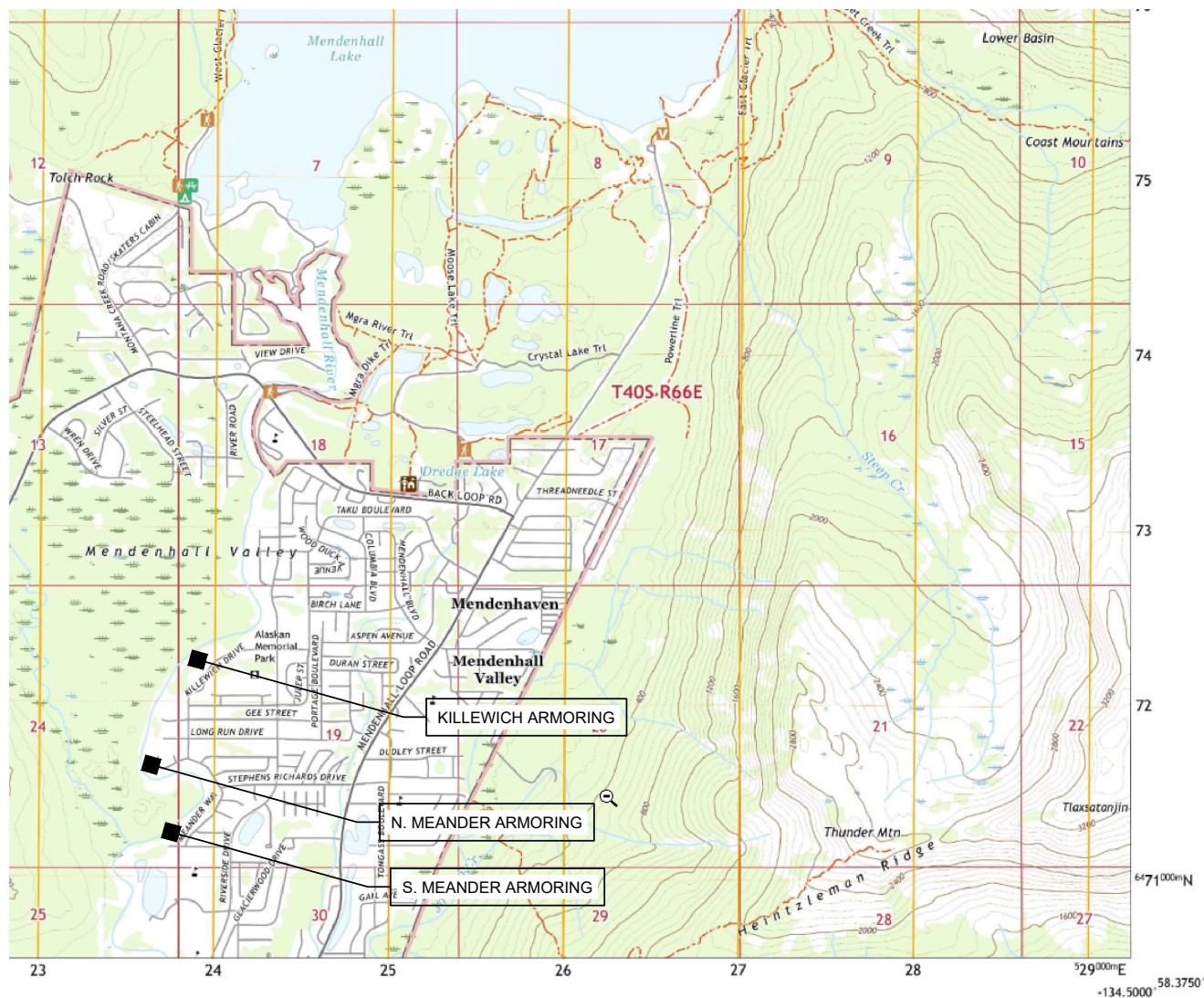
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
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PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
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3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.						

DATE: Feb 2025

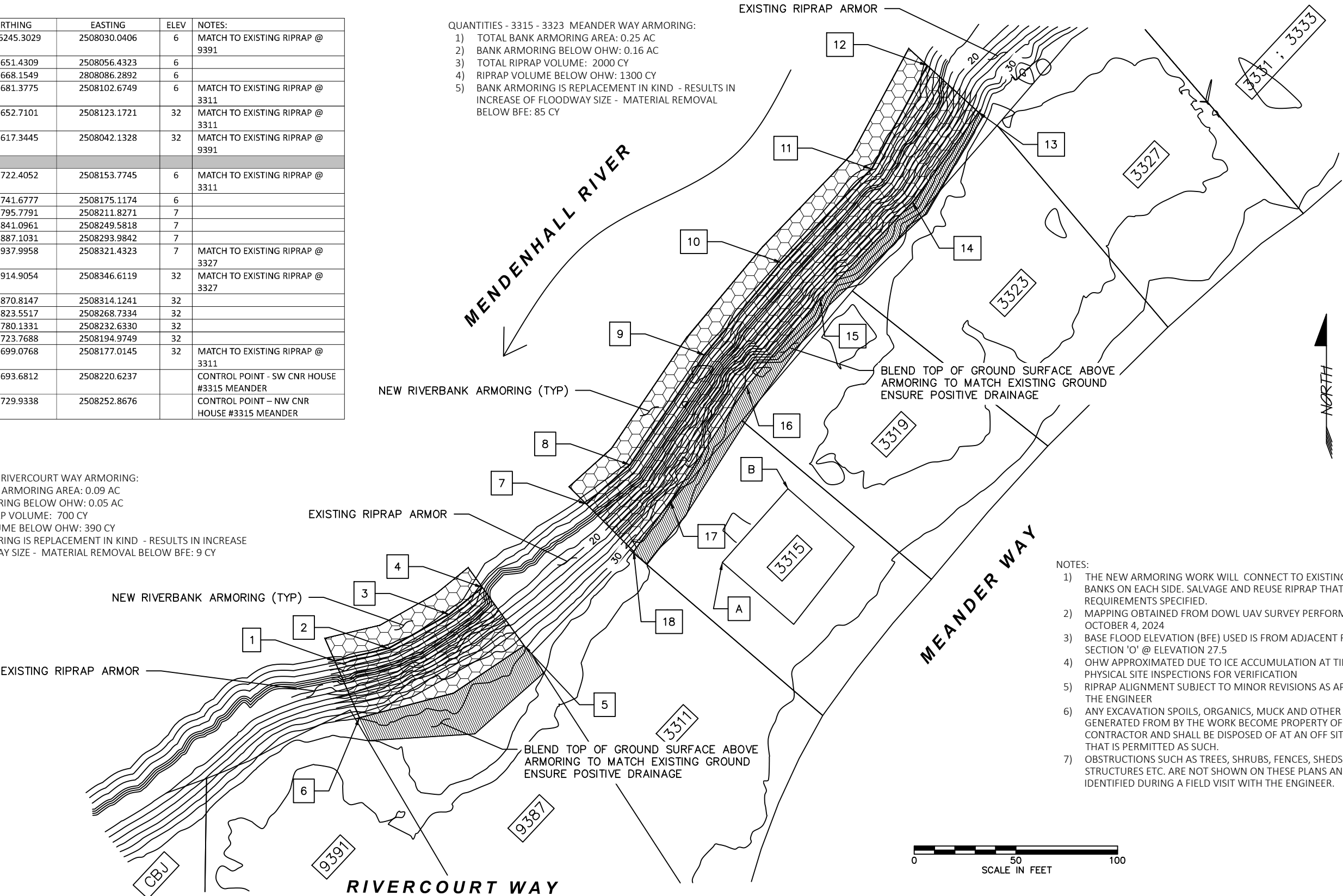
DRAWN BY: STAFF

SCALE: As Shown

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- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
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 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) TOTAL RIPRAP VOLUME: 700 CY
 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

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- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
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Revisions

Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

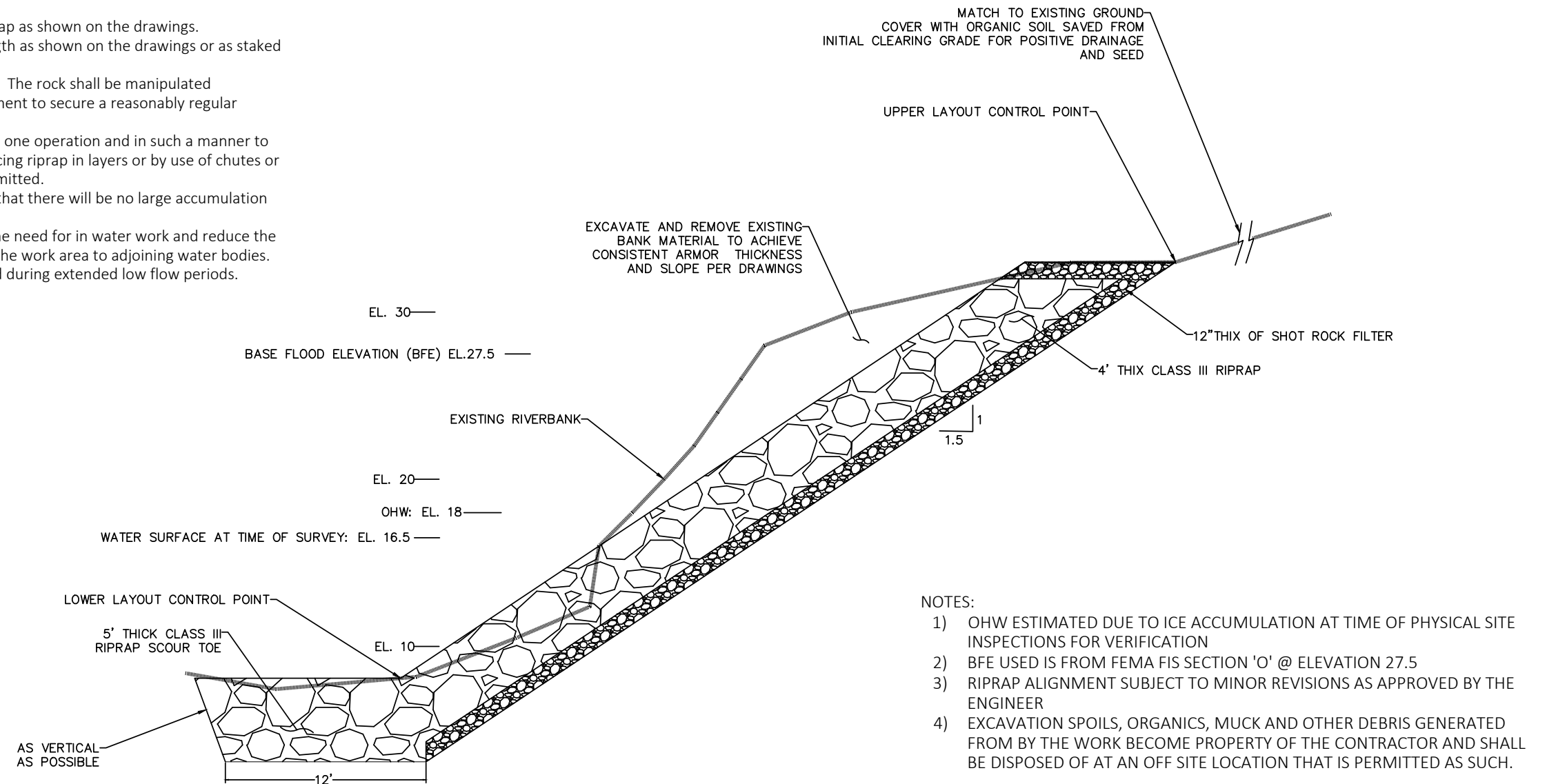
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**S. MEANDER ARMORING
TYPICAL SECTION**

DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

SHEET:
6 of **7**



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0029

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Loretta Neal
9387 Rivercourt Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38107 N, 134.59315 W

Dear Loretta Neal:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



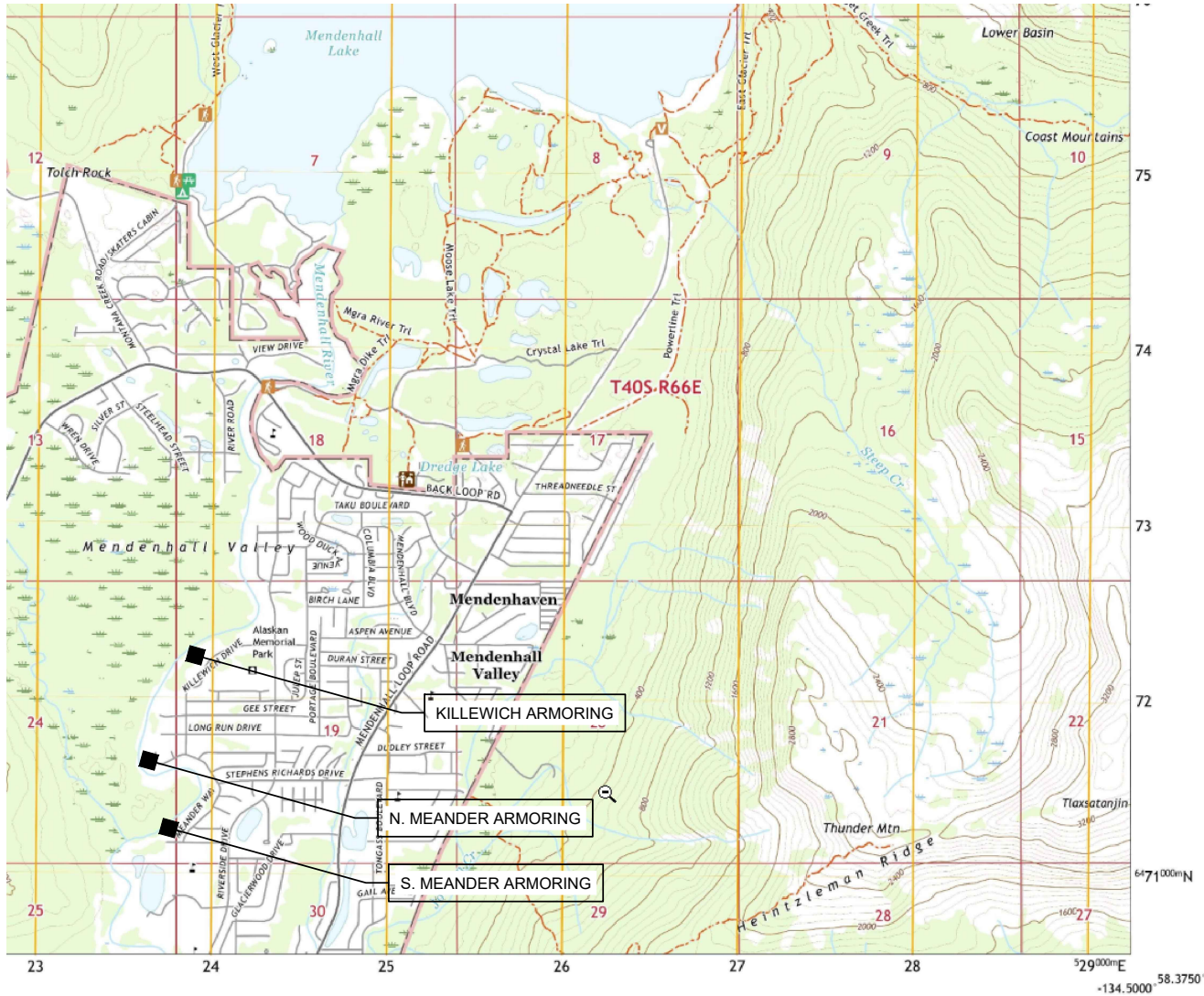
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

1	-	COVER AND LOCATION MAP
2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING		COVER AND LOCATION MAP		SHEET: 1 of 7
Date	Description	Intls.						

DATE: Feb 2025

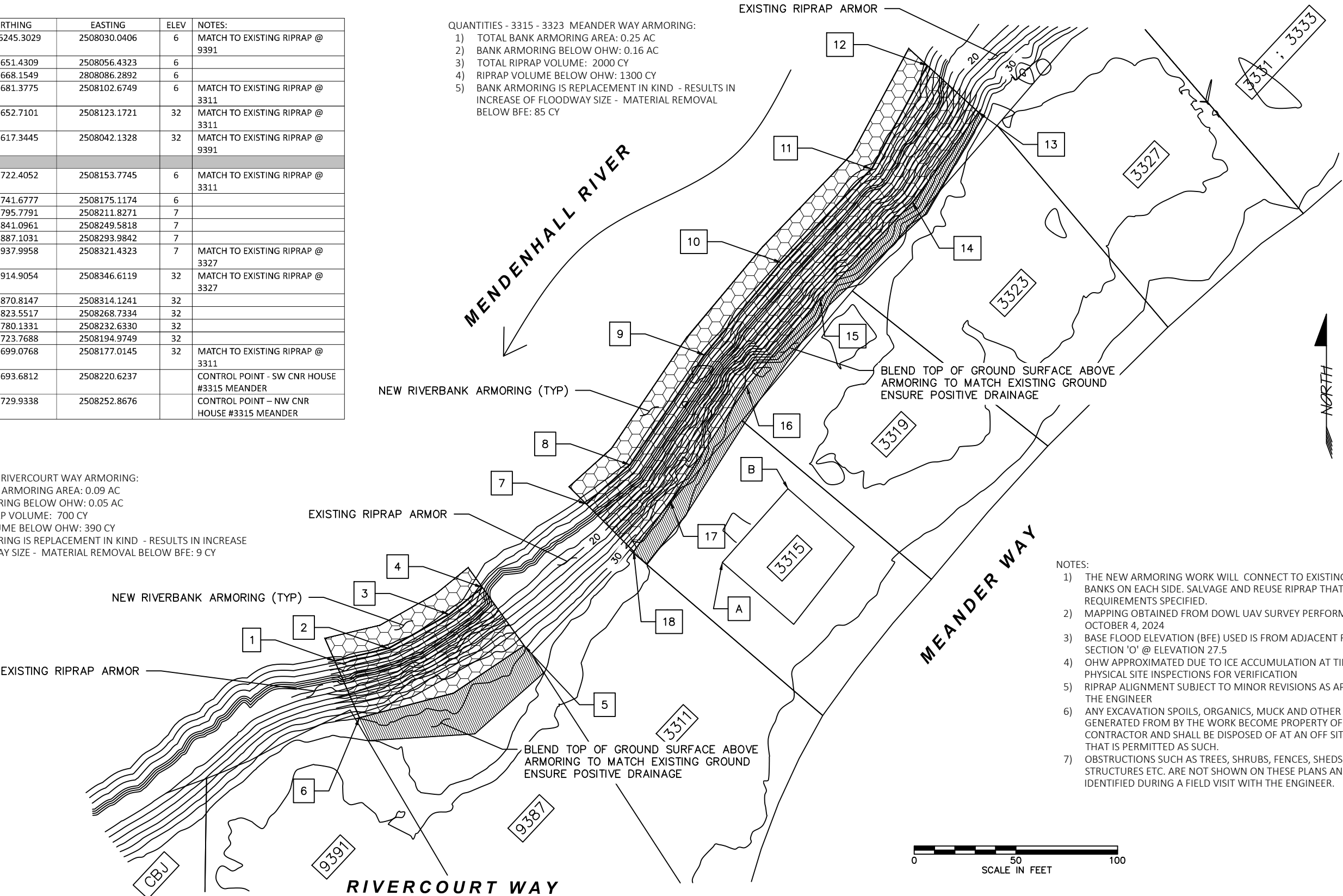
DRAWN BY: STAFF

SCALE: As Shown

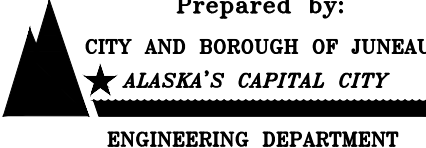
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) TOTAL RIPRAP VOLUME: 700 CY
 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) TOTAL RIPRAP VOLUME: 2000 CY
 - 4) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	S. MEANDER ARMORING CONSTRUCTION PLAN		SHEET: 7 of 7
Date	Description	Intls.					

DESCRIPTION

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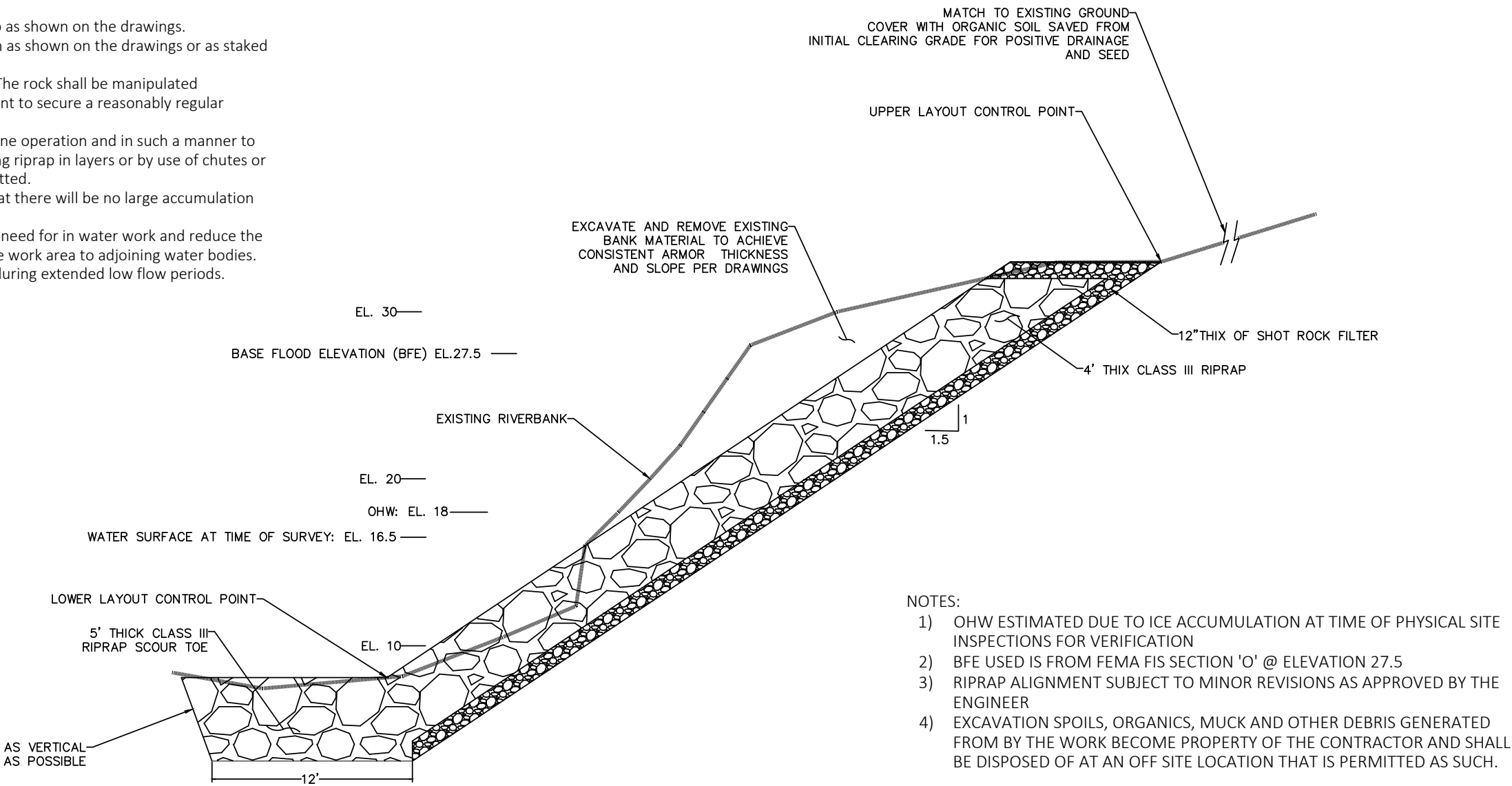
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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING

TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: CDD - Building
STAFF PERSON/TITLE: Jeff Hedges
DATE: 2025.07.01
APPLICANT: CBJ Engineering
TYPE OF APPLICATION: Flood Zone Exception

PROJECT DESCRIPTION:

CBJ Engineering is applying for a Flood Zone Exception to allow an encroachment and development of the HESCO Barrier, Phase 1 project.

LEGAL DESCRIPTION: See Parcel List in Application
PARCEL NUMBER(S): See Parcel List in Application
PHYSICAL ADDRESS: See Parcel List in Application

SPECIFIC QUESTIONS FROM PLANNER:

AGENCY COMMENTS:

AGENCY COMMENTS (CONTINUED):

From: [Raffier, Kaitlyn M \(DNR\)](#)
To: [Forrest Courtney](#)
Subject: RE: Flood Zone Exception 2025 0001: HESCO Barrier, Phase 1 - Agency Comment Request
Date: Wednesday, July 2, 2025 11:49:38 AM
Attachments: [image002.png](#)

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Hi Forrest,

Thank you for sending this along. DNR does not have a comment to submit, but we appreciate the opportunity to review. I hope you have a nice holiday!

Regards,

Kaitlyn Raffier

Southeast Regional Manager

Division of Mining, Land and Water | Department of Natural Resources

Phone: 907.465.3406 | **Email:** kaitlyn.raffier@alaska.gov

DNR DMLW Southeast Office Phone: 907.465.3400



“Putting Alaska’s resources to work – now and in the future!”

From: Forrest Courtney <Forrest.Courtney@juneau.gov>
Sent: Tuesday, July 1, 2025 4:26 PM
To: Raffier, Kaitlyn M (DNR) <kaitlyn.raffier@alaska.gov>
Subject: Flood Zone Exception 2025 0001: HESCO Barrier, Phase 1 - Agency Comment Request

CAUTION: This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon Kaitlyn,

CBJ Engineering is applying for a Flood Zone Exception for an encroachment and development of the HESCO Barrier, Phase 1 project from 9399 Rivercourt Way to 4395 Riverside Drive.

You’ll find the application and comment form attached. If you’d like your comments to be reflected in the staff memo, please submit them to me by July 7th. Any comments received between July 8th and July 18th at noon will be forwarded to the Planning Commission as additional materials.

If you have any questions, let me know!

Best,

Forrest Courtney | Senior Planner, Floodplain Manager
Community Development Department | City & Borough of Juneau, AK
Location: 230 S. Franklin Street | 4th Floor Marine View Building
Office: 907.586.0753 x4208

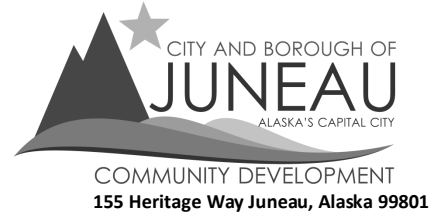
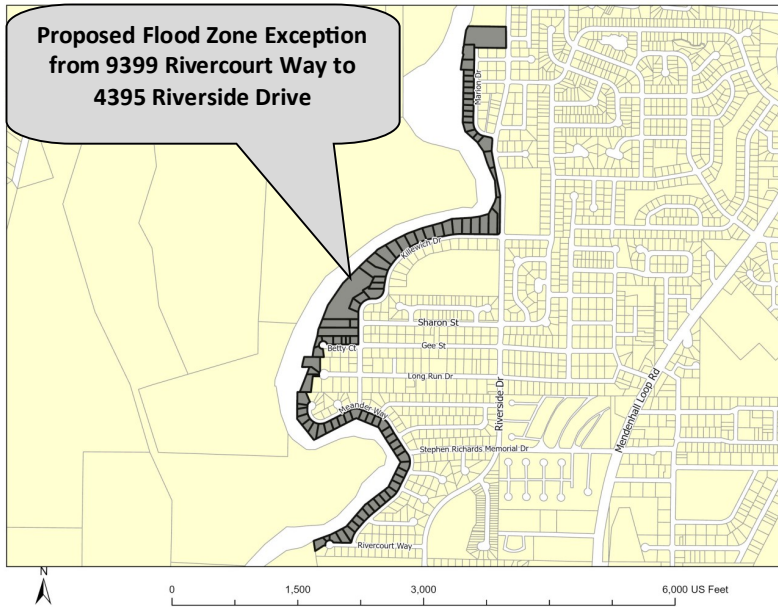


Fostering excellence in development for this generation and the next.

Invitation to Comment

On a proposal to be heard by the CBJ Planning Commission

Your Community, Your Voice



TO

A Flood Zone Exception has been submitted for consideration and public hearing by the Planning Commission for CBJ Engineering **to allow an encroachment and development of the HESCO Barrier, Phase 1 project from 9399 Rivercourt Way to 4395 Riverside Drive.**

PROJECT INFORMATION:

Project Information can be found at:

<https://juneau.org/community-development/short-term-projects>

PLANNING COMMISSION DOCUMENTS:

Staff Memo expected to be posted **July 14, 2025** at

<https://juneau.org/community-development/planning-commission>

Find hearing results, meeting minutes, and more here, as well.

Now through July 7

Comments received during this period will be sent to the Planner, **Forrest Courtney**, to be included as an attachment in the staff memo.

July 8 — noon, July 18

Comments received during this period will be sent to Commissioners to read in preparation for the hearing.

HEARING DATE & TIME: 7:00 pm, July 22, 2025

This meeting will be held in person and by remote participation. For remote participation: join the Webinar by visiting <https://juneau.zoom.us/j/85421744892> and use the Webinar ID: 854 2174 4892 OR join by telephone, calling: 1-253-215-8782 and enter the Webinar ID (above).

You may also participate in person in City Hall Assembly Chambers, 155 Heritage Way Juneau, Alaska.

July 23

The results of the hearing will be posted online.

FOR DETAILS OR QUESTIONS,

Phone: (907)586-0753 ext. 4208

Email: pc_comments@juneau.gov or forrest.courtney@juneau.gov

Mail: Community Development, 155 Heritage Way, Juneau AK 99801

Case No.: FZE2025 0001

Parcel No.: 0

CBJ Parcel Viewer: <http://epv.juneau.org>

Printed July 1, 2025

From: [Nate Rumsey](#)
To: [Forrest Courtney](#)
Subject: Fwd: FZE25-001 Signage
Date: Wednesday, July 2, 2025 5:05:03 PM

Good afternoon, Forrest,

The signage was placed this afternoon. Please see the photos below.

Regards,
Nate

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS





Sent from my iPhone



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/CDD
155 S. Seward Street • Juneau, AK 99801

DATE: July 14, 2025

TO: Mandy Cole, Chair, Planning Commission

BY: Scott Ciambor, Planning Manager
Community Development Department *Scott Ciambor*

THROUGH: Jill Lawhorne, AICP, Director
Community Development Department

FILE NO.: AME2019 0015

PROPOSAL: A Text Amendment to adopt the *Downtown Douglas / West Juneau Area Plan* as part of the CBJ Comprehensive Plan

This staff report provides details on the draft *Downtown Juneau / West Juneau Area Plan* planning process and includes attachments that provide a copy of the plan (**Attachment A**), agency comments (**Attachment B**), and public comments (**Attachment C**).

These materials and more can be found on the CDD website at: [CDD – NPC – Douglas – West Juneau – City and Borough of Juneau](#)

PLANNING COMMISSION ROLE

Three sections of Title 49 cover the purpose of the *Comprehensive Plan* and the duties of the Planning Commission in the *Comprehensive Plan* review process.

- Section 49.05.200 (b) notes, "The comprehensive plan adopted by the assembly by ordinance contains the policies that guide and direct public and private land use activities in the City and Borough."
- Section 49.10.170 (a) notes, "The commission shall undertake a general review of the comprehensive plan two years after the adoption of the most recent update and shall recommend appropriate amendments to the assembly. Proposed map changes shall be reviewed on a neighborhood or community basis as directed by the planning commission."

- CBJ 49.10.170(d) states that the Commission shall make recommendations to the Assembly on all proposed amendments to this title, zonings and re-zonings, indicating compliance with the provisions of this title and the Comprehensive Plan.

PURPOSE OF THE DOWNTOWN DOUGLAS / WEST JUNEAU PLAN

The Plan seeks to maintain the small town feel of Downtown Douglas, while enhancing connectivity to West Juneau and the greater community, and honoring the island's rich and diverse history and culture. The Plan provides a framework to guide the City and Borough of Juneau (CBJ) Assembly, departments, the Planning Commission, and other CBJ boards and commissions that will refer to this document to:

- Make informed decisions concerning future growth and development while maintaining a positive quality of life for residents; Plan for projects more efficiently;
- Assign appropriate resources to community needs;
- Identify needs for new or revised zoning and/or development regulations; and
- Identify infrastructure priorities.

The Plan also provides a framework to guide individuals, private companies, and other stakeholders when making investment and development decisions, and when questions affecting community development arise.

STEERING COMMITTEE, COMMUNITY ENGAGEMENT, AND PUBLIC INPUT

Most of this information is available [on the Downtown Douglas / West Juneau Area Plan website](#).

- 2019: Assembly approved budget for Douglas area plan
- January 2020: Corvus Designs awarded contract for public visioning process
- February 2020: Planning Commission appointed 9 members to Steering Committee
- 2020-2023: COVID delays, public focus groups, Steering Committee meetings
- August 2024: Project work resumed
- December 2024: Planning Commission appointed 2 committee members to fill vacancies
- May 2025: Open House, online survey, and public comment period
- June 2025: Steering Committee considered public input, finalized draft Plan

COMPLIANCE WITH THE COMPREHENSIVE PLAN (COMP PLAN)

Chapter 4 Housing Element

- Policy 4.4. To facilitate the preservation and rehabilitation of existing housing, particularly housing affordable to low-income residents.

Chapter 6 Energy

- Policy 6.1. To work with utility and energy providers to analyze the local energy system, potential renewable energy sources, and emerging technologies; to establish a long-term

energy plan; and to implement that plan for the affordable and sustainable use of energy in the community.

Chapter 7 Natural Resources and Hazards

- Policy 7.1. To protect the region's scenic, environmental, and economically-valuable natural resources from the adverse impacts of urban development. Development shall be controlled carefully and, if necessary, prohibited in naturally hazardous and ecologically-productive or sensitive areas.

Chapter 8 Transportation

- Policy 8.5. To promote a balanced, well-integrated local multi-modal surface transportation system that provides safe, convenient and energy-efficient access and transportation for people and commodities.

Comprehensive Plan Guidelines and Considerations for Subarea 9 (Maps M, O, P) include:

- Conduct an area plan or neighborhood plan for the downtown Douglas area that would address residential and non-residential uses in the vicinity of the harbor and town center with the goal of creating a Marine Mixed Use, transit and pedestrian-oriented community. Marine Mixed Use land uses could include: Water-related recreation, eco-tourism, commercial fisheries, sport fisheries, marine-related research and aquaculture, and other private and public use of the waters and shoreline; inland areas of housing, neighborhood-commercial needs, transportation systems, habitat protection, educational facilities, careful urban design, and view scape protection measures. This study should address the needs of and should include the participation of all stakeholders including property owners, residents, business operators, the Alaska Department of Transportation and Public Facilities, and all relevant CBJ Departments and Divisions.

While the DD/WJ Plan does not specifically discuss Marine Mixed Use, it does support and implement many of these uses, including recreation, shoreline access, mixed use development, public transit, pedestrian and bicycle traffic, and wildlife protection.

If adopted, the DD/WJ Plan will be an addition to the Comp Plan. The Plan provides a 20-year vision to guide growth, protect natural, historical and cultural resources, and enhance and maintain amenities for livability. Where DD/WJ and the Comp Plan conflict, or where DD/WJ is more specific, the *Downtown Douglas / West Juneau Area Plan* supersedes the *Comprehensive Plan*.

Findings

Based upon the information presented, the draft *Downtown Douglas / West Juneau Area Plan* satisfies the Comprehensive Plan Guideline to create an area plan.

STAFF RECOMMENDATION

Staff recommend that the Planning Commission approve the *Downtown Douglas / West Juneau Area Plan* and forward it to the Assembly with a recommendation to adopt as an addition to the CBJ Comprehensive Plan.

ATTACHMENTS

Attachment A: Draft Downtown Douglas / West Juneau Area Plan
Attachment B: Agency Comments
Attachment C: Public Comments

DOWNTOWN DOUGLAS / WEST JUNEAU AREA PLAN



JULY 2025



Land Acknowledgement: The Downtown Douglas / West Juneau Steering Committee and the CBJ Community Development Department (CDD) acknowledge that the planning area is located on Tlingit Aaní. The T'aaku Kwáan were the original owners and inhabitants and have lived here since time immemorial. We are grateful to be a part of the community and to honor the culture and traditions of the Tlingit people.

Gunálchéesh.

ACKNOWLEDGMENTS

The City and Borough of Juneau acknowledges and thanks all participants for their contribution to the creation of the Downtown Douglas / West Juneau Area Plan.

Planning Commission

Mandy Cole, Chair
Erik Pederson, Vice-Chair
Douglas Salik
Matthew Bell
Adam Brown
Lacey Derr
David Epstein
Nina Keller
Jessalynn Rintala

Steering Committee

Joyce Vick, Chair
Robert Sewell, Vice Chair
Rebecca Embler, Recorder
Carole Bookless
Frank Delaney
Linda Snow
Brian Lieb
Darren Snyder
Erik Pederson, Planning Commission
Liaison
Annette Smith, Docks & Harbors Board
Liaison

City and Borough of Juneau

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Greg Smith
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Matt Catterson, former Recorder
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Allison Eddins, former Planner
Alexandra Pierce, former Planner
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Association Liaison
Kamal Lindoff, Douglas Indian Association
Liaison

Thank You!

Special thanks to the staff at the Douglas
Public Library and Juneau Community
Schools.

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*Image left: Dog friend at Sandy Beach.
Photo credit: Forrest Courtney*

INTRODUCTION

The Downtown Douglas / West Juneau Area Plan provides a vision, policy guidance, and recommended actions for the next 20 years.



Douglas Island is a 75 square mile island stretching about 17 miles along Gastineau Channel. Though largely undeveloped, Douglas Island boasts Juneau's only ski resort, a boat launch, and residential areas to the north, and a school, downtown area, Harbor, and residential areas to the south.

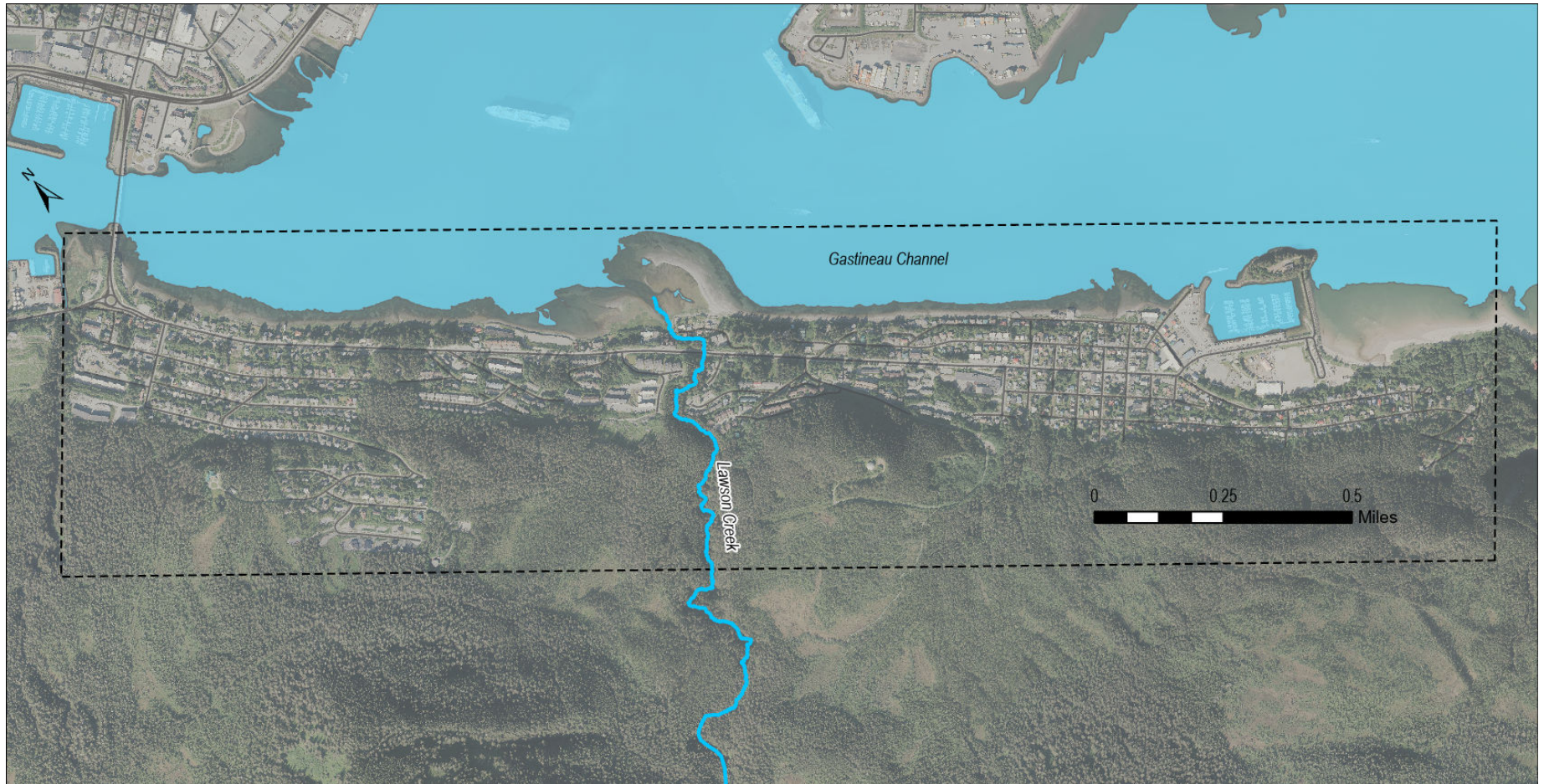
Douglas is informally divided by the Juneau-Douglas bridge, connecting the island to the mainland. Crossing from downtown Juneau, North Douglas is to the right, while West Juneau is to the left. Once you cross Lawson Creek, Downtown Douglas begins. Residents of this area generally call it simply "Douglas." Downtown Douglas / West Juneau is home to some of Juneau's oldest historical neighborhoods, including the Treadwell Mine, the former site of the Douglas Indian Village, and the original City of Douglas.

Purpose of the Downtown Douglas / West Juneau Area Plan

The Downtown Douglas / West Juneau Area Plan is Juneau's subarea plan for the portion of Douglas Island extending south from the bridge to the Sandy Beach recreation area. The Plan provides long term guidance for decision-makers, such as the Planning Commission and Assembly, to better understand the vision, goals, and desired outcomes of the community. If adopted, the Downtown Douglas / West Juneau Area Plan will become part of the City and Borough of Juneau's (CBJ) Comprehensive Plan. The Comprehensive Plan is CBJ's overarching management tool for growth, development, and resource management. The Downtown Douglas / West Juneau plan is intended to provide information specific to the area.

Image left: Soap box derby in Downtown Douglas.

MAP 1: PLANNING AREA



THE PLANNING PROCESS



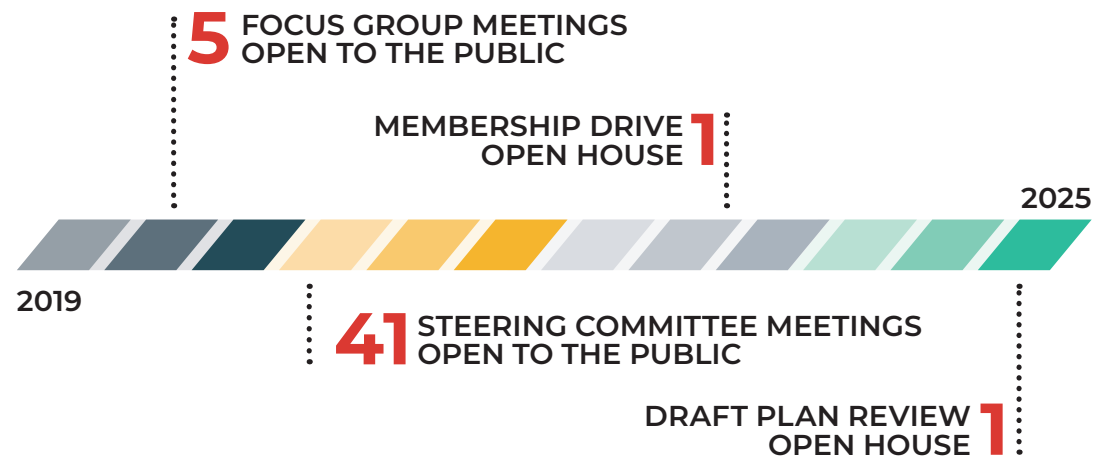
The Downtown Douglas / West Juneau planning process began with a public outreach effort that included public meetings focused on economic development, housing, transportation, and land use zoning.

STEERING COMMITTEE

The Steering Committee was appointed by the Planning Commission in February of 2020 to guide and inform the Plan. Additional members were appointed when work on the plan resumed in 2024, after delays caused by the pandemic and staff shortages. The Steering Committee represents a variety of interests, including personal, business, and recreational.

Liaisons from Douglas Indian Association and the CBJ Docks and Harbors Board and CBJ Planning Commission participated in Steering Committee meetings and plan development as non-voting members.

COMMUNITY INPUT



Images left: Steering Committee workshop held in August 2023.



Image: Douglas Island Bridge. Photo credit: Forrest Courtney.

Equity is defined by the American Planning Association's Planning for Equity Policy as "just and fair inclusion into a society in which all can participate, prosper, and reach their full potential."

EQUITY

The Downtown Douglas / West Juneau steering committee identified equity as a community value early in the process.

The committee utilized training materials by the American Planning Association's (APA) Planning for Equity Policy to learn about equity and ensure that committee discussions and decision-making happened through an equity lens. The committee took steps to create a more equitable planning process through invitations and outreach to under-represented groups to participate in public meetings and open houses and to serve as committee liaisons. The committee encourages CBJ staff to continue to find ways for inclusive comment through the public process and adoption of the Plan.

APA'S THREE ESSENTIAL QUESTIONS:



Who is helped?



Who is harmed?



Who is missing?

WHY IS EQUITY IMPORTANT?

Equity means that everyone has the opportunity and access to participate, prosper and reach their full potential. Historically, discrimination and inequity have been ingrained into plans, policies and laws. The Downtown Douglas / West Juneau Area Plan seeks to ensure that the costs and benefits of change and growth are distributed equitably, the plan benefits as many as possible, harms as few as possible, and includes everyone possible.

PLANNING AREA

The presented data was derived from the 2022 American Community Survey (ACS). ACS helps local officials, community leaders, and businesses understand the changes taking place in their communities. It is the premier source for detailed population and housing information about our nation.

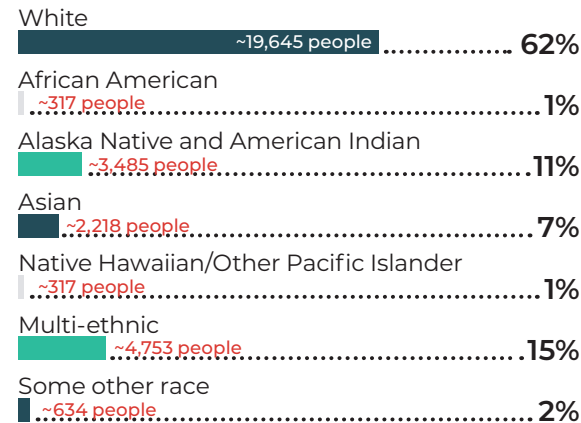
RACIAL DISTRIBUTION

The estimated population of Downtown Douglas / West Juneau was 3,094 people, and CBJ was 31,685 people.

DOWNTOWN DOUGLAS / WEST JUNEAU



CITY AND BOROUGH OF JUNEAU



MEDIAN INCOME

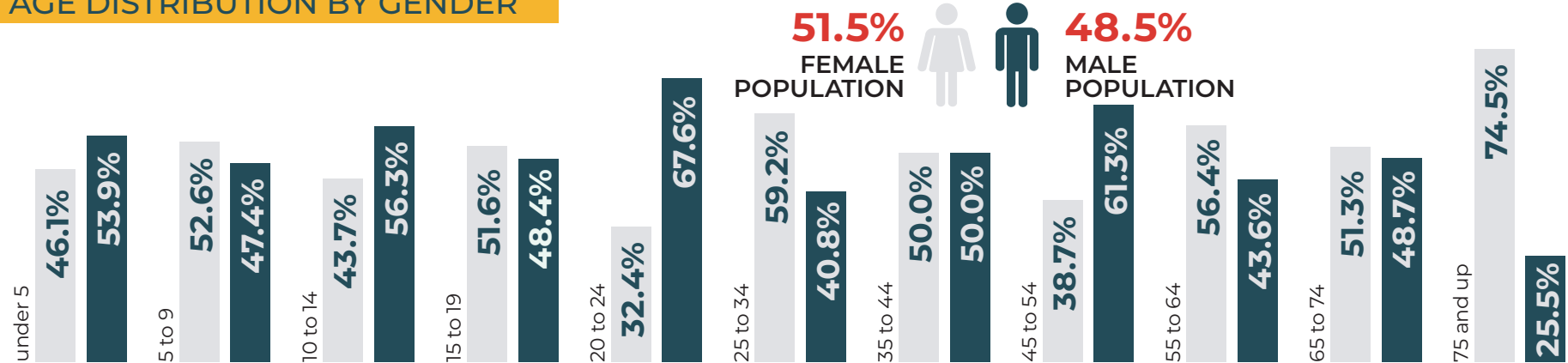


CITY AND BOROUGH
OF JUNEAU
\$95,711

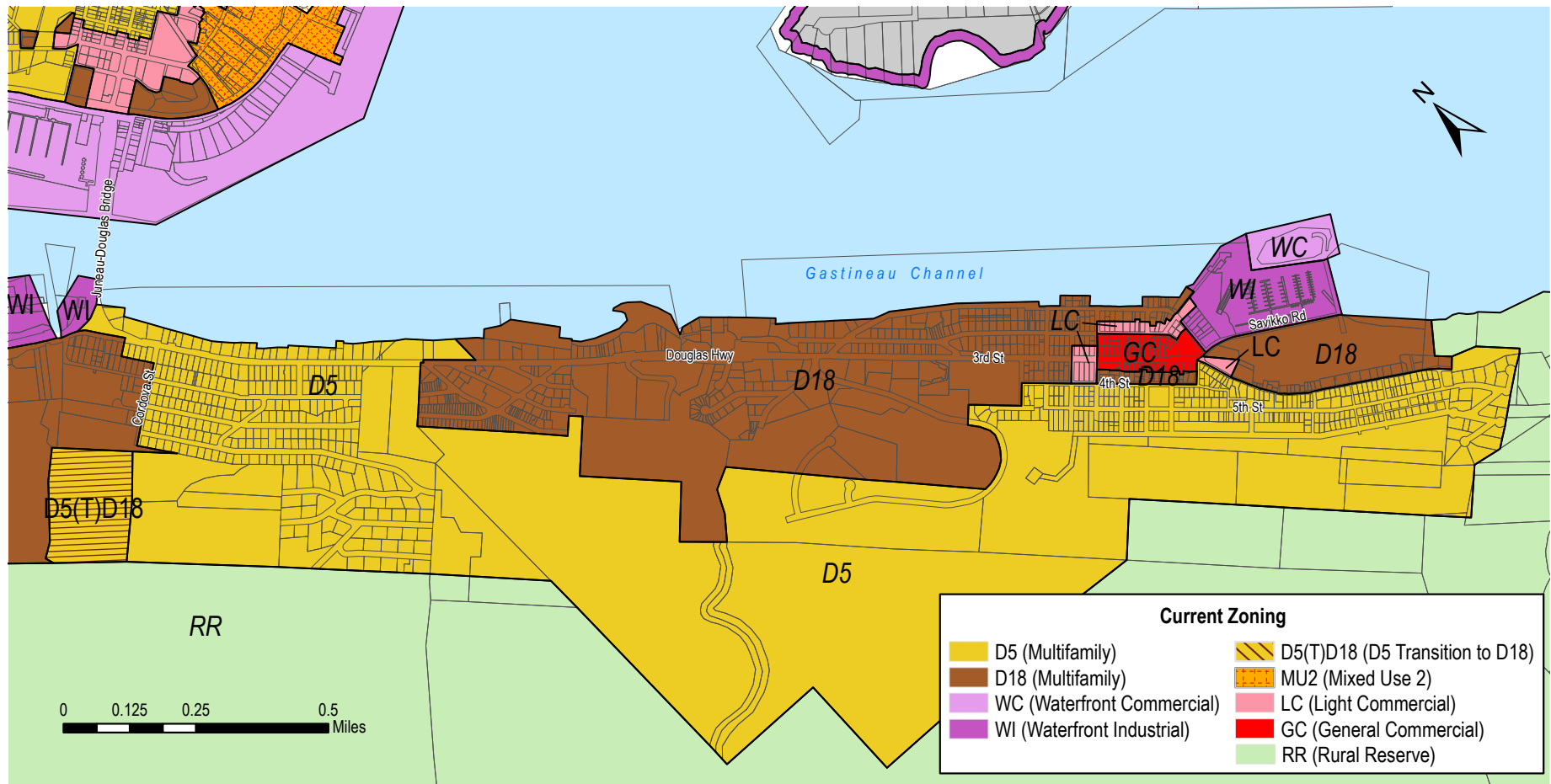


DOWNTOWN
DOUGLAS /
WEST JUNEAU
\$84,914

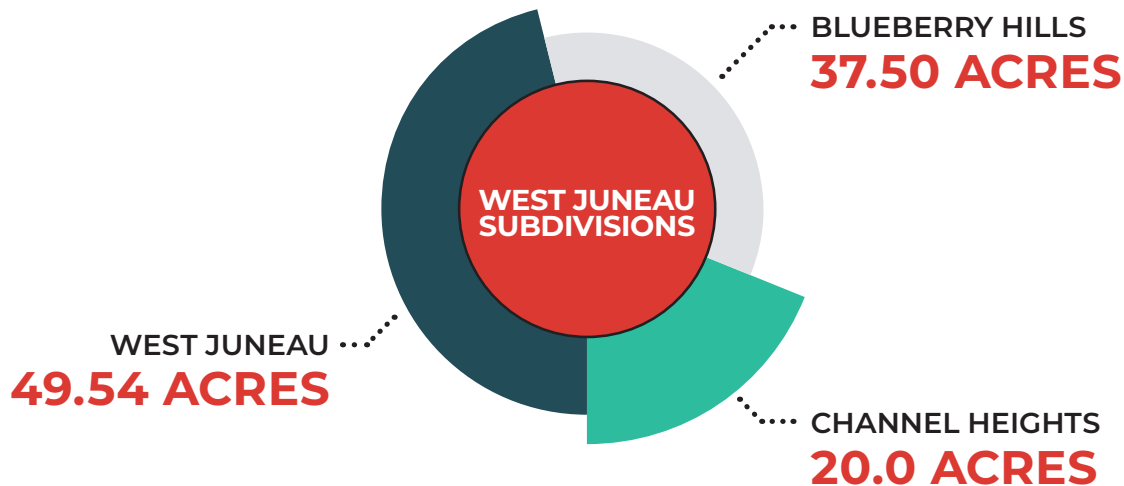
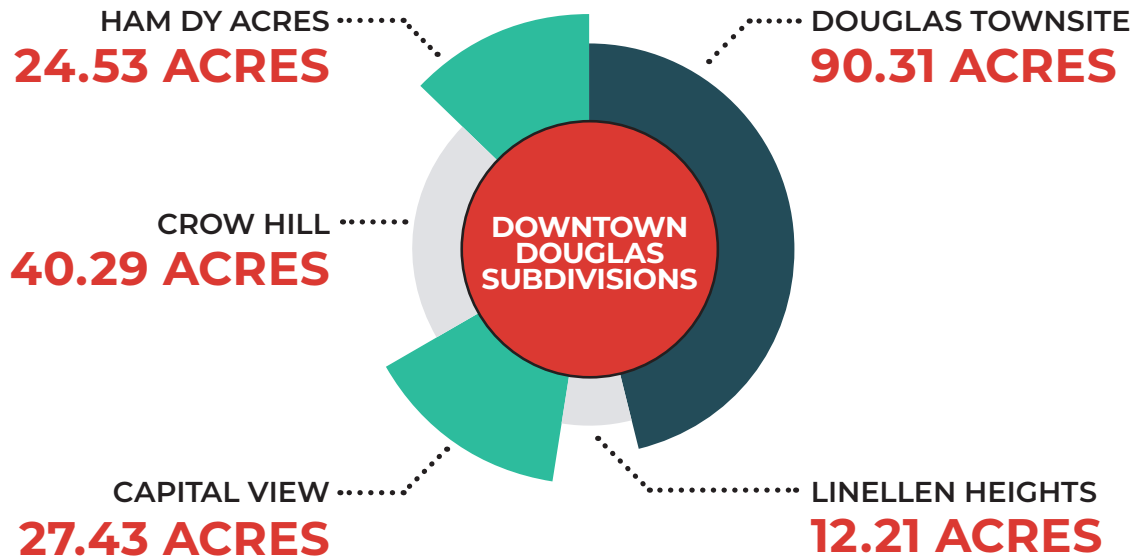
AGE DISTRIBUTION BY GENDER



MAP 2: ZONING



PLANNING BOUNDARIES



DOWNTOWN DOUGLAS

Originally established as Edwardsville in 1881, the town of Douglas was predominantly residential, with a small business district supporting nearly 2,000 Alaska Treadwell Gold Mining Company employees and their families. The City of Douglas was incorporated in 1902, then merged with the City of Juneau in 1970 to form the CBJ.

Downtown Douglas is situated on the Northeastern side of Douglas Island, across the Gastineau Channel from Juneau. The waterfront tidelands slope gradually upward to the base of Mount Brady (Jumbo). At the turn of the 20th century, development was largely on the flatter land closer to the water. Due to the lack of flat and dry land, residential development in the 21st century has begun to creep into steeper terrain.

WEST JUNEAU

West Juneau is situated on the northeastern side of Douglas Island, across from Downtown Juneau. Development in West Juneau began in the 1940s following the construction of the Juneau-Douglas bridge in 1935. West Juneau is both a subdivision and the colloquial name for the area south of the Juneau-Douglas Bridge to Lawson Creek, the natural border of Downtown Douglas.

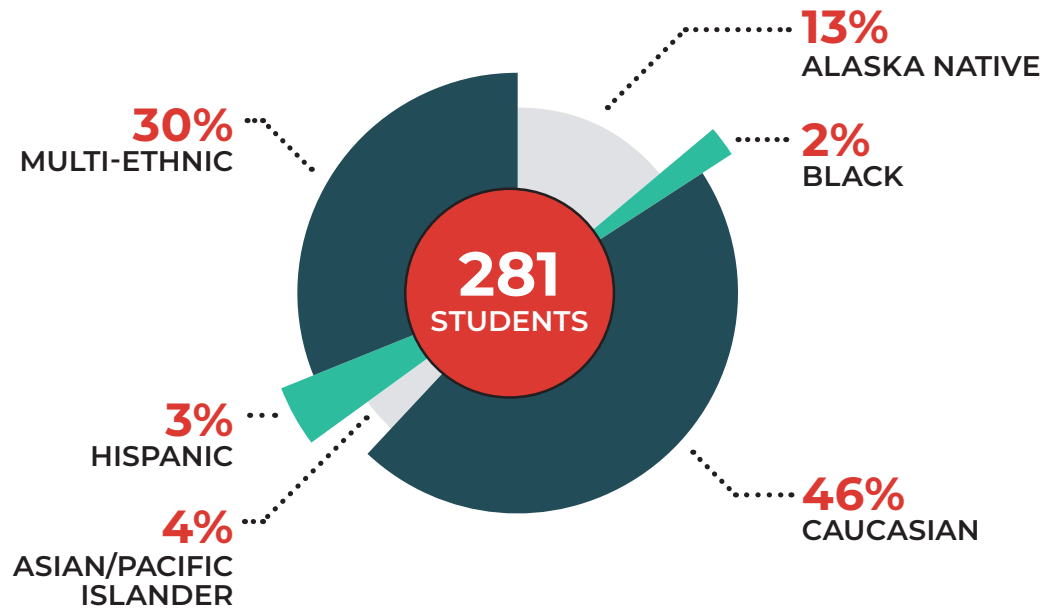
Images right: Sayéik: Gastineau Community School photos used with permission.



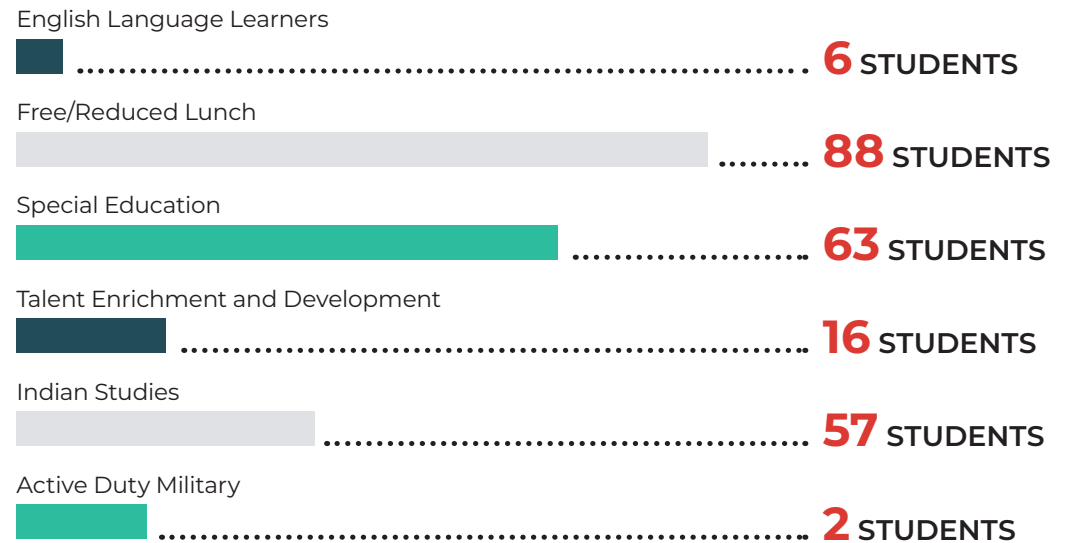
The heart of Douglas, Sayéik: Gastineau Community School serves elementary students from all over Douglas Island.



STUDENT DEMOGRAPHICS



SPECIAL PROGRAMS



OUR VISION

Downtown Douglas / West Juneau is a distinctive, equitable, safe, prosperous, connected and artistic community. With access to abundant recreational opportunities, where neighbors interact and connect, it is a community that honors the island's rich and diverse history and culture while providing opportunities for sustainable, healthy and inclusive growth and restoration.



Downtown Douglas / West Juneau is, at its core, a vibrant residential community anchored by the elementary school, downtown area and harbor. Through the public process, it is apparent that residents love their community and are looking toward maintaining and enhancing the small town, connected atmosphere. The vision for Downtown Douglas / West Juneau is a statement of values that will guide the goals and actions of the plan elements. Future planning decisions should address the question “does this fit with our stated vision?”

PLAN ELEMENTS

The following plan elements set forth the goals and actions to guide the community towards its vision. Each goal supports the vision, and the recommended actions seek to achieve the goals.

Downtown Douglas / West Juneau plan elements are:



Connected Community



Cultural and Artistic Community



Prosperous Community



Sustainable and Green Community



Healthy and Active Community

Image left: A group of people play bag pipes at the Fourth of July parade on Douglas Island. Photo credit: Arnold Liebelt.



CONNECTED COMMUNITY

A connected community means Downtown Douglas / West Juneau residents have a full range of safe, equitable and accessible opportunities to connect with each other and to places within and outside of the area boundaries.

A connected community links residents to their neighbors, the Juneau community, and beyond. Connections can be physical, such as bike paths and public transit, or virtual, through Wi-Fi and other information technology.

TRANSPORTATION

Creating a connected community will positively impact the quality of life for residents. Well-maintained highway, bridge, and harbor connections to the rest of Juneau are necessary for access by Douglas Island residents to goods and services, economic supports such as jobs and commercial fishing grounds, and recreational opportunities. These connections are also essential for access to Douglas businesses and events by patrons living off-Island. A well-planned transportation network of hillside staircases, maintained sidewalks, and paved roads enhances safety and access for neighborhoods currently disconnected.

Connected communities improve the economic vitality of the area by ensuring access to public facilities, local amenities, and nature. The Mike Pusich Douglas Harbor, Savikko Park and Sandy Beach, Perseverance Theatre, Douglas Public Library, and downtown restaurants and retail shops are attractive destinations for both residents and visitors.

TECHNOLOGY

Access to the Internet and online resources creates social and professional connections, supporting local businesses, organizations, and residents. Infrastructure like the Douglas Public Library and Sayéik: Gastineau Community School are important hubs, used by groups such as the Douglas Advisory Board to connect the community to the decision-making process.

Image left: Douglas Public Library.

GOAL 1.1:

Develop a well-maintained motorized transportation network that provides year-round access within Downtown Douglas / West Juneau and beyond to the greater Juneau community.

ACTIONS:

- A. Maintain and improve roadways and bridge connections to Juneau for access to goods and services and economic opportunities for Douglas residents, and for access to Douglas businesses and events by off-Island patrons.
- B. Maintain and improve the Mike Pusich Douglas Harbor for access to commercial fishing and recreational activities.
- C. Develop an alternative route to improve emergency response and reduce congestion at stressed intersections.
- D. Encourage and participate in ongoing Juneau-wide discussions about a second crossing between Douglas and Juneau.
- E. Allocate appropriate funding for winter maintenance of streets.
- F. Include Capital Improvement Project (CIP) proposal to pave existing streets in Downtown Douglas / West Juneau to reduce maintenance costs and improve air quality.

A well-planned transportation system will provide opportunities and choices for all modes of travel that is safe and efficient, reduces ongoing maintenance costs, and improves the community's quality of life.

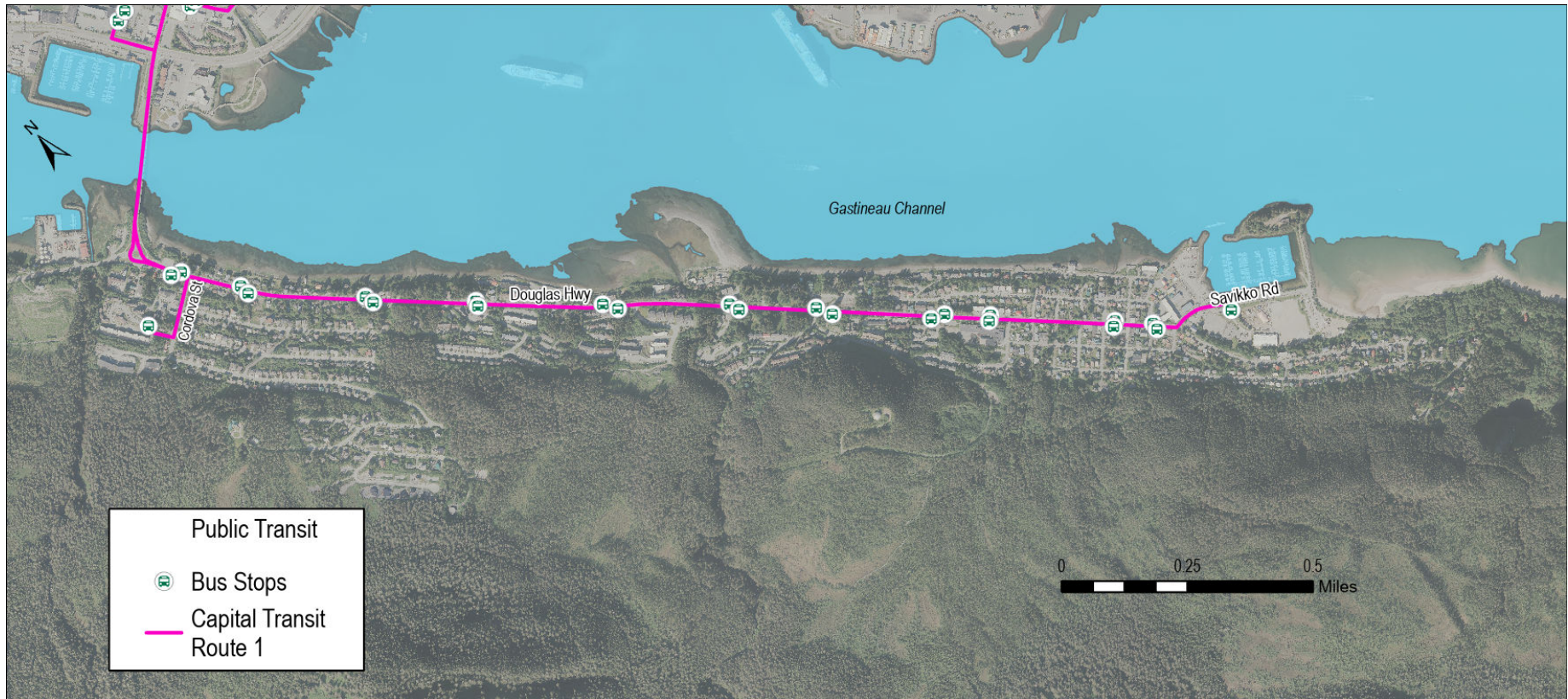
GOAL 1.2:

Develop a non-motorized transportation system that provides residents and wildlife safe travel corridors throughout Downtown Douglas / West Juneau.

ACTIONS:

- A. Build and maintain stair connections to provide pedestrian links between streets and access to properties where slopes make road or sidewalk connections impractical.
- B. Implement traffic calming measures along Douglas Highway / 3rd Street to improve pedestrian and non-motorized transportation safety.
- C. Invest in bicycle and pedestrian infrastructure.
- D. Allocate appropriate funding for proper winter maintenance of sidewalks and bike lanes.
- E. Add crossing lights to existing crosswalks at the Douglas Highway and Cordova Street intersection and 3rd Street and 1st Street by the Sayéik: Gastineau Community School.
- F. Preserve existing wildlife pathways or create alternative pathways to minimize human/wildlife interactions.

MAP 3: CURRENT PUBLIC TRANSIT



GOAL 1.3:

Ensure that Downtown Douglas / West Juneau residents have access to year-round public transit that is safe, convenient, and reliable.

ACTIONS:

- A. Install covered bus stops with lighting at all Capital Transit Route 1 stops to increase the safety of riders.
- B. Allocate appropriate funding to Capital Transit to increase the efficiency and convenience of routes and expand the hours of operation, including holidays.

GOAL 1.4:

Foster community connections to the waterfront that are accessible to all residents and visitors of Downtown Douglas / West Juneau.

ACTIONS:

- A. Identify potential access points to the shoreline along Gastineau Channel and develop a waterfront trail linking West Juneau to Downtown Douglas.
- B. Develop a wayfinding plan to guide users to safe and appropriate routes to the waterfront.
- C. Improve connectivity from the downtown core and opportunities for usage of the Mike Pusich Douglas Harbor, Treadwell Arena, Mayflower Island, and Savikko Park, encouraging visitors to stay in the area and visit local businesses.
- D. Designate waterfront land for use to enhance understanding of Alaska Native history in Douglas, in cooperation with the Douglas Indian Association and other organizations.

Image left: Treadwell Historic Mine pumphouse at Sandy Beach. Photo credit: Pat McGonegal.

Image below: View of Downtown Douglas down 2nd Street. Photo credit: Forrest Courtney.



GOAL 1.5:

Provide resources for the community to engage in development decisions through comprehensive public dialogue to reflect all community voices.

ACTIONS:

- A. Allocate appropriate funding to expand hours of operation and computer access at the Douglas Public Library.
- B. Expand the CBJ public Wi-Fi network to include additional hotspots and increase active hours across Douglas.
- C. Establish and maintain a Douglas Community website on the CBJ website to provide information about the community, including consultations prior to development decisions, activities and events, local businesses, and neighborhood groups.
- D. Develop CBJ policies to ensure the involvement of under-served and under-represented communities in the public process.
- E. Designate Douglas Advisory Board members as community liaisons to attend and report on Planning Commission meetings, Assembly meetings, and the Assembly Public Works and Facilities Committee meetings.
- F. Establish CBJ community-based youth and community outreach committees, as well as a dedicated public website.

Image right: Student youth group protesting the state budget. Photo credit: Juneau Empire.

GOAL 1.6:

Use Mt. Jumbo Gym and adjacent maintenance shop located at 4th and D Streets as a multi-purpose community hub.

ACTIONS:

- A. Relocate the maintenance shop to another location.
- B. Enhance existing facilities to maintain and expand public uses, including indoor and outdoor activities.
- C. Support future redevelopment to include housing, such as studio apartments, as well as community spaces.





PROSPEROUS COMMUNITY

A prosperous community means Downtown Douglas and West Juneau residents have a full range of services and economic opportunities.

West Juneau is primarily residential. The downtown Douglas area offers a post office, library, fire station, live theatre, restaurants, a gas station, and other commercial enterprises. These are within easy walking distance of parks and public amenities such as Savikko Park, Treadwell Arena and the Mike Pusich Douglas Harbor. A Prosperous Community maximizes area assets to support a thriving, more self-sufficient local economy.

EMPLOYMENT OPPORTUNITIES

Prosperous communities support a range of employment, including telecommuting, home businesses, and entrepreneurship. Supporting a diverse workforce benefits the entire CBJ.

TOURISM

Small scale tourism provides an economic boost to the area, with opportunities for collaboration among local arts, cultural, historical, and recreational organizations and businesses.

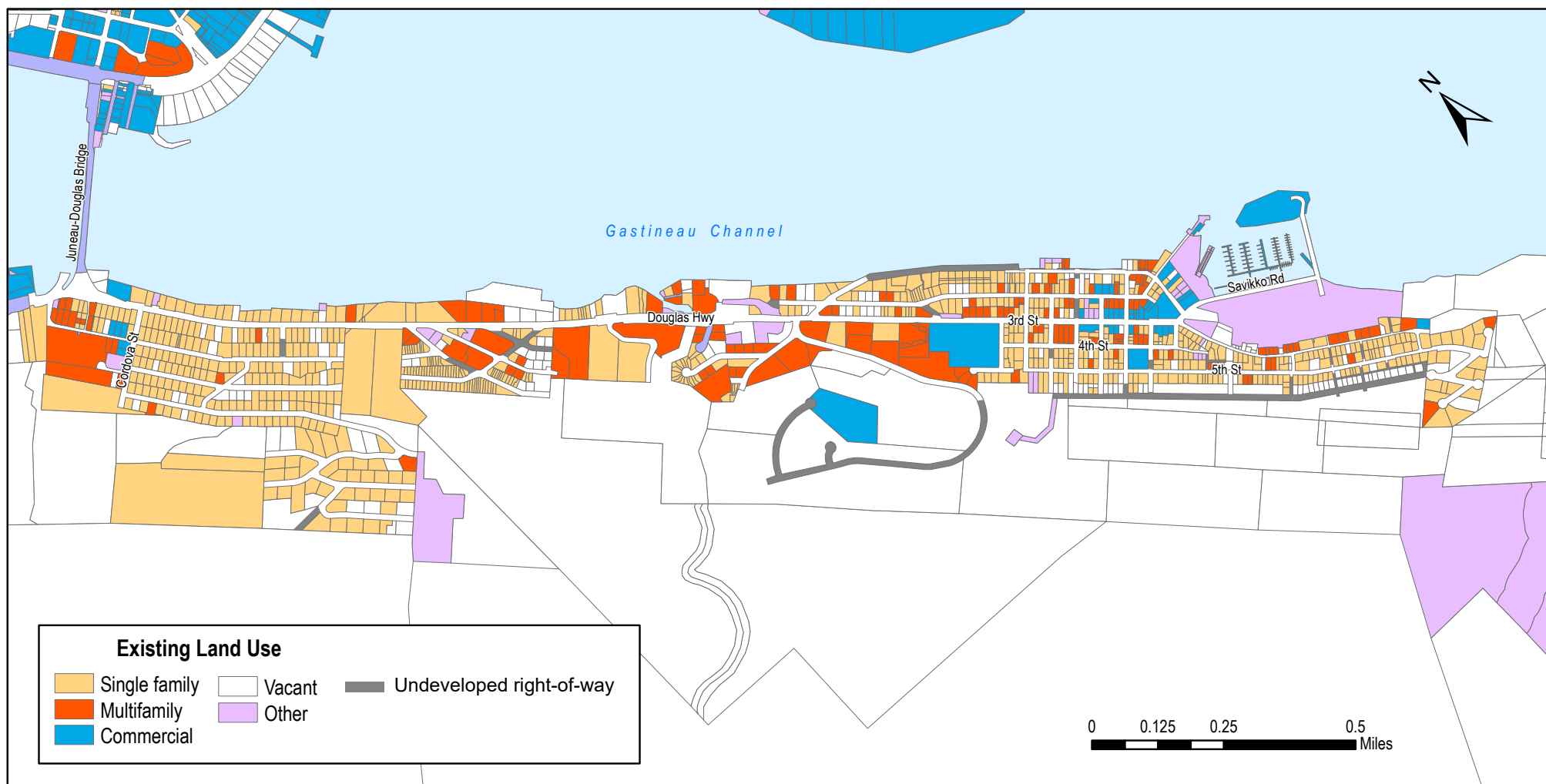
INFRASTRUCTURE

The infrastructure of Downtown Douglas and West Juneau is unique and should be preserved for current and future generations. Anchors like the Perseverance Theatre and Treadwell Arena contribute to a prosperous community. Housing will support employment and increase city tax revenue.

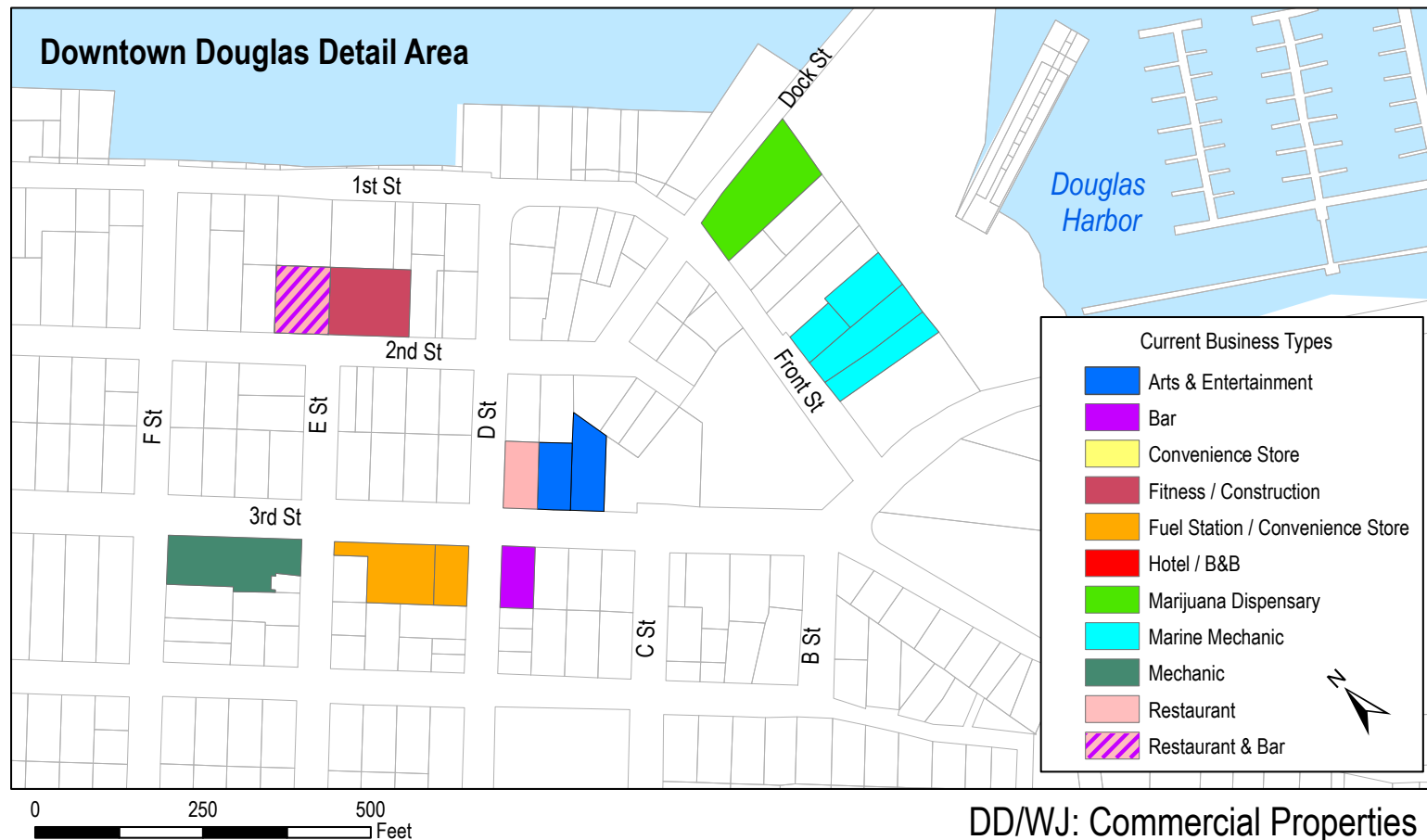
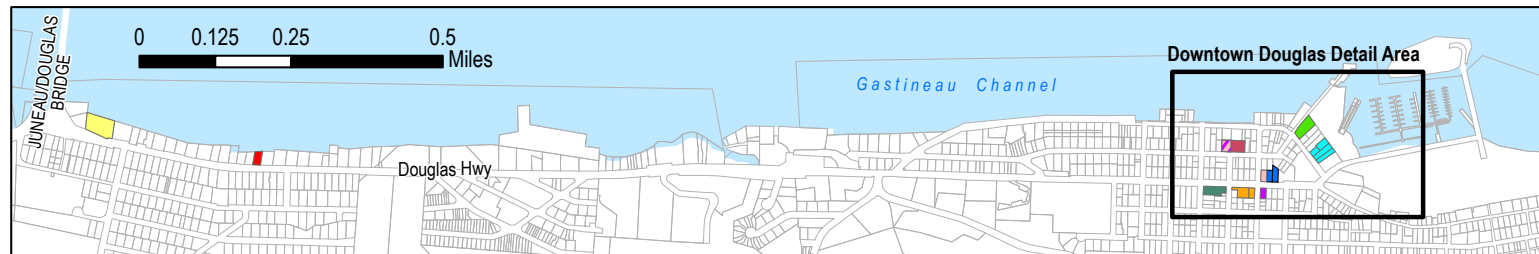
TRANSPORTATION SYSTEM

Downtown Douglas / West Juneau is located on an island, and transportation connections, such as highways, bridges, and harbors, to goods and services and economic opportunities off-island are essential for economic prosperity.

Image left: Louie's Douglas Inn.



MAP 4: CURRENT LAND USE



DD/WJ: Commercial Properties

Map date: April 2025

MAP 5: CURRENT COMMERCIAL PROPERTY

GOAL 2.1:

Identify needed services and areas for economic growth.

ACTIONS:

- A. Use available local and state data to map existing services in the Plan area.
 - B. Conduct a community needs assessment to identify and prioritize missing services.
 - C. Survey existing commercial enterprises to identify what supports are needed to advance more commercial activities.
 - D. Survey for underused public properties that could be repurposed and identify potential uses.
 - E. Develop an action plan to address results of community surveys outlined in Goal. 2.1.
-

GOAL 2.2:

Support small scale tourism.

ACTIONS:

- A. Market Douglas' natural environment, outdoor lifestyle, performing arts, culture, and history.
- B. Develop opportunities for cultural, historical, and eco-tourism.
- C. Develop and permit opportunities for small tour operators offering small group, low impact experiences

GOAL 2.3:

Support local entrepreneurs and employers that provide year-round services.

ACTIONS:

- A. Promote opportunities for businesses and entrepreneurs to address service gaps.
- B. Encourage local employers to use the Douglas Community website to promote vacant year-round positions.
- C. Promote telecommuting opportunities to those who may consider relocating to Douglas for its small town qualities.
- D. Enhance telecommunications services to Downtown Douglas and West Juneau.
- E. Embark on a study to increase parking opportunities, such as cooperative agreements with owners of downtown parking lots to open spaces in off hours.
- F. Encourage businesses within residences by making the city code definition of "home occupation" less restrictive.

"Small scale tourism" integrates visitors into the community through low impact tours or activities for small groups and independent travelers.

GOAL 2.4:

Enhance the Mike Pusich Douglas Harbor and surrounding parkland as a community anchor for recreational and economic activity.

ACTIONS:

- A. Develop new and improve existing public amenities at the harbor, such as paved parking, landscaping, restrooms, and period or artistic lighting improvements.
- B. Facilitate commercial activity designed to attract visitors and residents from other areas of Juneau, such as food trucks, and light, small scale tourism, by providing dedicated vendor space, access to potable water, and other amenities.
- C. Diversify public uses at Savikko Park to fully utilize space.
- D. Coordinate planning efforts for the Mike Pusich Douglas Harbor and Savikko Park, recognizing their proximity and potential for collaboration.
- E. Support the CBJ Assembly goal to support the Douglas Indian Association's efforts to acquire Mayflower Island from the U.S. Department of Interior.
- F. Install a public use dock at the Mike Pusich Douglas Harbor for recreational and potential commercial use.



Image above: Group of students near the Douglas Island Bridge on bike to school day. Photo Credit: Sayéik: Gastineau Community School photo used with permission.

GOAL 2.5:

Preserve and expand infrastructure and systems to grow and support economic activity.

ACTIONS:

- A. Maintain and improve existing and build new roadways and bridge connections to Juneau for access to goods and services and economic opportunities for Douglas residents, and for access to Douglas businesses and events.
- B. Maintain and improve community anchors such as theaters and sports arenas, and enhance their connections within the community,
- C. Actively support Juneau-wide hydroelectric development and other renewable energy projects to capitalize on clean and reasonably priced sources of electricity.

Image right above: A decorated house to celebrate the Fourth of July. Photo credit: Molly McCormick.

Image right below: Island Hills Apartments, example of "Missing Middle" housing in Douglas. Photo credit: Casey Kelly, KTOO.

Mixed-use developments support the economic vitality of a community by lowering infrastructure costs, promoting in-fill development, reducing auto dependence, offering a greater range of housing types, and creating diverse and safe neighborhoods.



GOAL 2.6:

Diversify housing options to support a broad range of current and future Douglas residents.

ACTIONS:

- A. Examine and eliminate barriers to partnerships, to support housing and economic development opportunities.
- B. Incorporate “Missing Middle” housing such as duplexes, triplexes, and rowhouses and innovative housing types such as co-housing.
- C. Maintain and enhance opportunities for liveaboards in the Mike Pusich Douglas Harbor.
- D. Incentivize property owners of vacant lots or buildings to create housing.





HEALTHY AND ACTIVE COMMUNITY

A healthy and active community means Downtown Douglas / West Juneau residents have access to food, healthcare, and recreational activities, in a safe environment.

Community can have a major impact on a person's health and well-being. Food insecurity, lack of health services, and unsafe neighborhoods negatively impact Juneau as a whole, potentially contributing to higher healthcare costs and increased crime. A healthy and active community provides opportunities for residents to take care of themselves and their neighbors.

FOOD SECURITY

Food security is a measure of both food availability and an individual's ability to access it. Juneau's reliance on imported food creates borough-wide food insecurity. Downtown Douglas / West Juneau does not have a full service grocery store, potentially cutting residents off from food access, in the event of a bridge closure.

HEALTHCARE AND RECREATIONAL ACTIVITIES

Juneau offers access to a wide variety of health services, but currently not on Douglas Island. Locally accessible healthcare and education would enhance the wellbeing of residents. Telehealth and home-based work initiatives described in "Prosperous Community" may be viable solutions.

SAFETY

Safety is important to every community. Juneau Police Department (JPD) programs such as "Neighborhood Watch" and "Crime Prevention Through Environmental Design (CPTED)" use tools like safety ambassadors and physical design techniques to increase security.



Image left: Fourth of July parade. Photo credit: Arnold Liebelt.

GOAL 3.1:

Support and enhance access to healthy foods, including local and traditional foods.

ACTIONS:

- A. Encourage community gardens in parks and neighborhoods.
- B. As part of a comprehensive plan for Savikko Park and the Mike Pusich Douglas Harbor, develop a growing space in Savikko Park, such as a community garden or another type of managed growing space.
- C. Encourage Fruiting Forests.
- D. Include food bank information on the Douglas Community website.
- E. Encourage the development of a food co-op.
- F. Encourage the development of a “gleaning” program where excess fresh foods from gardens, farmers markets, grocers, restaurants, events or any other sources in are collected and provided to those in need.
- G. Develop an emergency plan for supply of food and necessities if Douglas is cut off from the mainland in the future.

GOAL 3.2:

Promote and enhance access to community health and wellness.

ACTIONS:

- A. Work with health care providers to hold health fairs and offer “pop up” clinics to provide access to primary care, dental, behavioral health, emergency, and other public health services.
- B. Develop a mapping and signage system for recreational programming, community activities and infrastructure. Consider implementing Quick Response (QR) codes and utilizing apps and mobile friendly websites to take advantage of changing technologies.
- C. Use the Douglas Community website to advertise and inform the community about recreational choices, programming and activities, and community initiatives such as walking groups and community bike rides and hikes in Downtown Douglas / West Juneau.
- D. Enhance the CBJ’s Homestead Park to include access to the water and off-street parking.

GOAL 3.3:

Create a pedestrian and bike path connecting West Juneau and Downtown Douglas.

ACTIONS:

- A. Collaborate with private landowners to develop a public park and community garden connecting Foster Avenue and Simpson Avenue.
- B. Collaborate with private landowners to develop a pathway across Lawson Creek and private property connecting Raven Road with John Street.

Access to local health care could be enhanced with health fairs and pop up clinics.

GOAL 3.4:

Promote a community where people of all backgrounds and identities feel safe and respected.

ACTIONS

- A. Expand community access to programs and activities that improve safety such as JPD's CPTED consultations.
- B. Actively recruit and encourage participation from individuals who belong to underserved communities to participate in groups and committees.
- C. Provide public trashcans and pickup to shoreline areas, bus stops, and other high use areas.
- D. Add outdoor or covered seating adjacent to the post office, library, and other community anchors to encourage community dialog.
- E. Ensure that snow management plans remove snow berms in a timely manner, prioritizing sidewalks, bus stops, and wheelchair accessible spaces.
- F. Provide a wheel-chair accessible ramp or boardwalk to the Sandy Beach shore.
- G. Provide a hose bib in or near the restrooms or shelters at Sandy Beach.

Image left: Mountain biking trail by Simpson Avenue. Photo credit: Forrest Courtney.

Image right: Cast members of "Indecent" rehearse at Perseverance Theatre in preparation for the play. Photo credit: Mark Sabbatini / Juneau Empire.



CULTURAL AND ARTISTIC COMMUNITY

A cultural and artistic community means residents and visitors have opportunities to learn, create, and thrive together, advancing economic prosperity, social equity, and cultural vitality.



Arts and culture bring people together, strengthen a community's sense of place, offer opportunities for learning and entertainment, and build both social and economic capital. Downtown Douglas / West Juneau is rich in culture, arts and history.

HERITAGE

The social and cultural life of a community thrives when all members contribute their knowledge, experience, skills and talents as volunteers, artists, participants and customers. Acknowledging the unique and complex history of this area will foster a respectful and connected community.

ECONOMIC GROWTH

Bringing together the artists, organizations, cultural and artistic programs and supporting partnerships will leverage the power of arts and culture as an economic stimulator. Historic preservation can attract tourists, shoppers, businesses and residents.

SOCIAL CONNECTIONS

Community events bring people together, boosting both social and economic capital. Douglas has a long tradition of hosting community events such as Gold Rush Days, Douglas Fourth of July, and the Christmas Tree Lighting.

GOAL 4.1:

Honor, preserve, and promote the heritage of Downtown Douglas / West Juneau.

ACTIONS:

- A. Develop educational displays/materials about the Douglas Indian Village that was located at Savikko Park.
- B. Partner with tribal, governmental and other organizations on projects that highlight the area's unique cultural and natural history.
- C. Expand the historic districts and use the designation to preserve the character of an individual structure or neighborhood where there is historic, architectural, cultural, and/or geographical significance to Douglas.
- D. Encourage the maintenance of and public informational signs about the cemeteries along Douglas Highway.



GOAL 4.2:

Foster economic growth through arts, culture, creative industries and integrated art that celebrates the diversity of our community and our cultural heritage.

ACTIONS:

- A. Promote and grow local events such as Gold Rush Days, Douglas Fourth of July and the Christmas Tree Lighting, and create additional events such as “A Taste of Douglas” that appeal to visitors and residents.
- B. Develop and advertise historic preservation opportunities.
- C. If Mayflower Island is transferred from the federal government, subsequent development should be encouraged to be small scale.
- D. Provide information on how to incorporate local arts into site development and building design and encourage new developments and substantial renovations to do so.
- E. Develop a mapping and signage system for arts, creative, cultural and historic resources. Consider implementing QR codes and utilizing apps and mobile friendly websites to take advantage of changing technologies.

*Image left: Band playing at Gold Rush Days.
Photo credit: Gold Rush Days.*

GOAL 4.3:

Support community well-being through cultural and artistic activities that celebrate diversity and promote inclusivity.

ACTIONS:

- A. Use public forums and outreach, including the Douglas Community website, to advertise and educate the community about art, music and cultural activities.
- B. Support partnerships between artists, artistic programs, and cultural organizations.

Image top right: Douglas Indian Village. Photo credit: Alaska State Library, Delbert Replogle Photo Collection, ASL-P169-05).

Image below right: Conceptual rendering by NorthWind Architects of the “Anax Yaa Andagan Ye Daakahidi: Cultural, Historic, Education, and Language Preservation Center.” Photo credit: NorthWind Architects.

The Douglas Indian Association is constructing the “Anax Yaa Andagan Ye Daakahidi: Where the Sun Rays Touch First” Cultural, Historic, Education, and Language Preservation Center. The Center will support cultural and language preservation and provide a venue for Elders, Family, and Youth programs.





Image above top: Douglas townsite 1939. Photo credit: unknown.

Image above bottom: Douglas graveyard. Photo credit: unknown.

Image right: Douglas Indian Village & Railroad To Treadwell 1900s. Photo credit: unknown.



The Tlingit T'aa u Kwáan and A'akw Kwáan clans have inhabited Anax YaatAndagan Yé (Douglas) and Dzantik'i Héeni (Juneau) since time immemorial. In 1962, the Douglas Indian Village was burned down by the City of Douglas, claiming it was abandoned. Village residents maintained it was known they away were at fish camps.

CBJ issued a formal apology on October 21, 2024, for its role in the 1962 burning of the Douglas Indian Village, home to many Tlingit families, which caused irreparable harm to the Tlingit people, their heritage, and their government.



SUSTAINABLE AND GREEN COMMUNITY

A sustainable and green community is economically viable, environmentally sound, and socially responsible.

All five of the Area Plan Elements support a sustainable future for Downtown Douglas / West Juneau. Continuing and expanding sustainable practices will help maintain the area's inherent beauty and unique character, while creating a resilient, sustainable community poised to meet future challenges.

ECONOMIC VIABILITY

Construction costs in Juneau are high due to the difficulty of obtaining supplies, limited availability of developable land, challenging building conditions and a short construction season. Using previously developed land and existing infrastructure more efficiently reduces these costs. Reusing existing buildings also avoids carbon emissions inherent in new construction, helping to combat climate change.

HOUSING

Creating and sustaining quality neighborhoods by developing affordable housing through a diversity of housing types and densities is necessary to be a community where people live, work and thrive throughout their lives. Historic preservation is a smart, efficient way to reuse a community's resources and keep its character at the same time.

ENERGY

Energy and technology are key factors in a community's ability to be sustainable. Energy efficient buildings and energy conservation reduce consumption, carbon footprint and operational costs, while improving both indoor and outdoor environments.

Image left: Example of Adaptive Reuse, former Treadwell Office Building adapted for use as part of a historic trail and public events, such as charter school graduation. Photo credit: Forrest Courtney.

GOAL 5.1:

Sustain economic viability and growth by promoting rehabilitation and reinvestment in existing infrastructure and buildings.

ACTIONS:

- A. Support preservation and re-use of existing housing to improve and expand the housing supply.
- B. Incentivize redevelopment and renovation of aging properties through tax abatement and revolving loans.
- C. Expand existing or create a new locally funded program for rehabilitation and restoration of housing units within historic buildings.



GOAL 5.2:

Promote access to renewable energy sources, efficiency and new technology that is reliable and affordable to all people.

ACTIONS:

- A. Implement an electric vehicle (EV) charging permit program and provide EV charging facilities at CBJ facilities, Heritage Park, and the top of Cordova Street. Encourage or require EV charging facilities in commercial and multi-family developments.
- B. Promote the Douglas Public Library as an information and technology hub of Douglas.
- C. Work with business owners on practical recycling and packaging practices.
- D. Develop incentives and programs to encourage energy efficiency and conservation in both new construction and renovations.

GOAL 5.3:

Preserve the natural, undeveloped area above 5th Street.

ACTIONS

- A. Re-designate the Land Use category of approximately 17 acres of CBJ-owned parcels abutting the 6th Street right of way from Urban Low Density Residential to Conservation Area or Natural Area Park.

Image left: Rehabilitation project. Photo credit: Forrest Courtney

GOAL 5.4:

Identify, promote, and encourage proactive solutions and innovations to address the effects of climate change on Infrastructure and life in Douglas.

ACTIONS:

- A. Encourage solutions to minimize/address water runoff in major rain events.
- B. Study, plan and implement measures to mitigate the impact of landslides, mudslides, and avalanches in Douglas.
- C. Research, promote, and incentivize the use of climate change adaptation and mitigation ideas.
- D. Encourage and incentivize energy efficient construction such as Leadership in Energy and Environmental Design (LEED) certified buildings.
- E. Encourage recycling and composting by facilitating drop-off points in Douglas.
- F. Explore and encourage the feasibility of wind, tidal, solar, and other non-polluting technologies in Douglas.

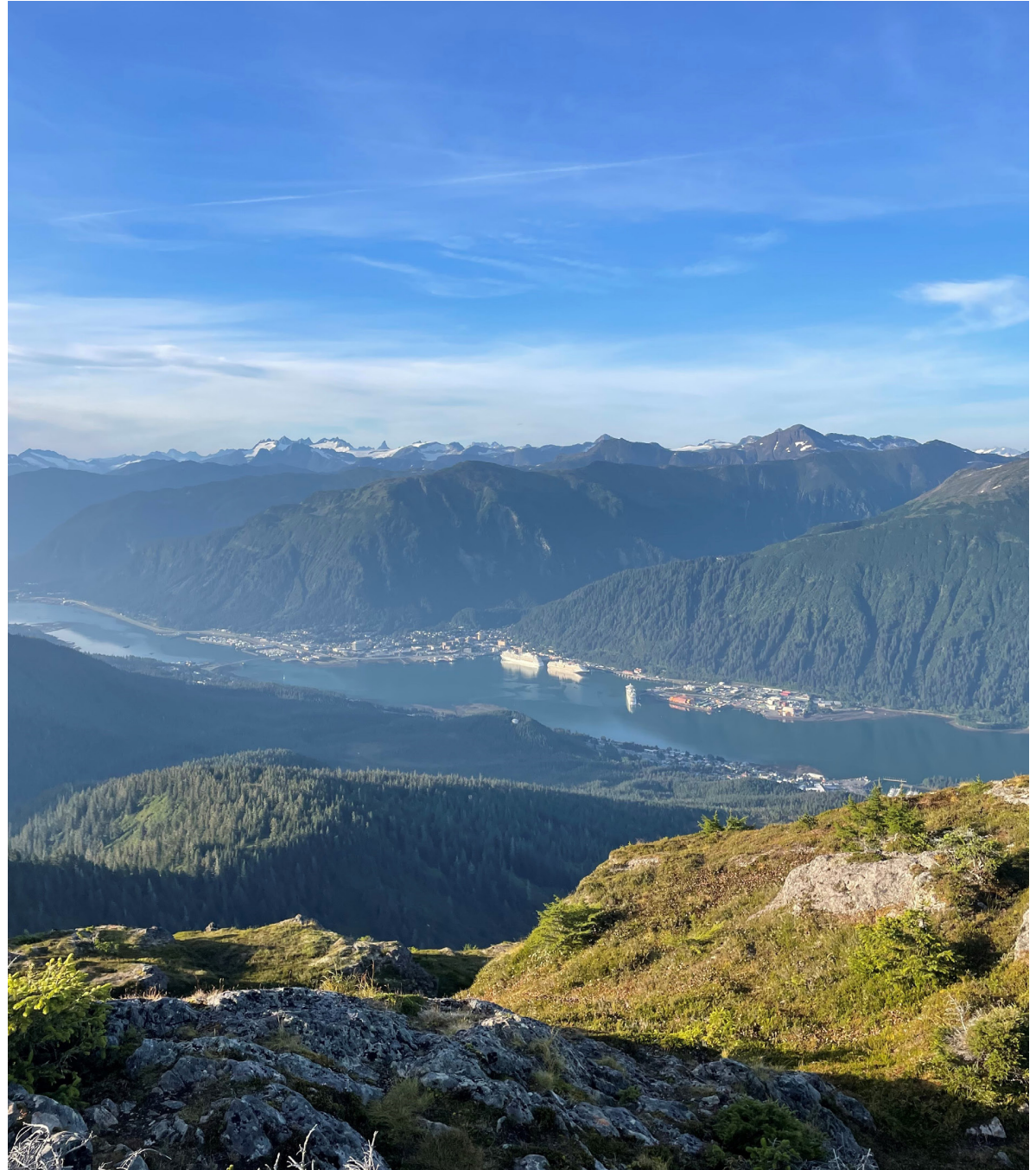


Image right: View of Downtown Juneau from Mount Bradley (Jumbo). Photo credit: Forrest Courtney

IMPLEMENTATION



Open House visitors participated in a Counter Mapping exercise to show their priorities for the area.



MEASURING OUR SUCCESS

Tracking a few choice metrics will help us measure our success moving forward and putting the plan into action. CBJ will need to annually measure and highlight progress towards achieving the Plan's goals and policies, publish reports and recognize community partners who contribute towards achieving the vision. The following indicators are recommended as initial measures:

- Number of Actions included in CBJ Community Improvement Projects
- Number of Actions reflected in CBJ annual budgets
- Number of housing units added per year
- Number of commercial businesses added per year
- Number of home based businesses added per year
- Annual Community Tourism Survey results





The Public Open House was held on May 7, 2025. Participants had the opportunity to engage in several activities to confirm goals and actions and to identify community priorities.





CONNECTED COMMUNITY

Goal 1.1: Develop a well-maintained motorized transportation network that provides year-round access within Downtown Douglas / West Juneau and beyond to the greater Juneau community.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Maintain and improve roadways and bridge connections to Juneau for access to goods and services and economic opportunities for Douglas residents, and for access to Douglas businesses and events by off-Island patrons.	E&PW, DOT&PF	Ongoing
B. Maintain and improve the Mike Pusich Douglas Harbor for access to commercial fishing and recreational activities.	D&H	Ongoing
C. Develop an alternative route to improve emergency response and reduce congestion at stressed intersections.	E&PW, Lands, CDD, DOT&PF	Long term
D. Encourage and participate in ongoing Juneau-wide discussions about a second crossing between Douglas and Juneau.	CBJ, DAB, DOT&PF	Ongoing
E. Allocate appropriate funding for winter maintenance of streets.	E&PW, Manager	Ongoing
F. Include CIP proposal to pave existing streets in Downtown Douglas / West Juneau to reduce maintenance costs and improve air quality.	E&PW, Manager	Short term

Goal 1.2: Develop a non-motorized transportation system that provides residents and wildlife safe travel corridors throughout Downtown Douglas / West Juneau.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Build and maintain stair connections to provide pedestrian links between streets and access to properties where slopes make road or sidewalk connections impractical.	E&PW	Long term
B. Implement traffic calming measures along Douglas Hwy / 3rd Street to improve pedestrian and non-motorized transportation safety.	E&PW, DOT&PF	Long term
C. Invest in bicycle and pedestrian infrastructure.	E&PW, DOT&PF	Long term
D. Allocate appropriate funding for proper winter maintenance of sidewalks and bike lanes.	E&PW, Manager, DOT&PF	Ongoing
E. Add crossing lights to existing crosswalks at the Douglas Hwy and Cordova Street intersection and 3rd Street and 1st Street by the Sayéik: Gastineau Community School.	E&PW, DOT&PF	ASAP
F. Preserve existing wildlife pathways or create alternative pathways to minimize human/wildlife interactions.	CBJ, SOA, private	Ongoing

Goal 1.3: Ensure that Downtown Douglas / West Juneau residents have access to year-round public transit that is safe, convenient, and reliable.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Install covered bus stops with lighting at all Capital Transit Route 1 stops to increase the safety of riders.	E&PW Capital Transit, DOT&PF	Long term
B. Allocate appropriate funding to Capital Transit to increase the efficiency and convenience of routes and expand the hours of operation, including holidays.	E&PW, Manager	Ongoing

Goal 1.4: Foster community connections to the waterfront that are accessible to all residents and visitors of Downtown Douglas / West Juneau.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Identify potential access points to the shoreline along Gastineau Channel and develop a waterfront trail linking West Juneau to Downtown Douglas.	P&R, Lands	Long term
B. Develop a wayfinding plan to guide users to safe and appropriate routes to the waterfront.	P&R, D&H	Long term
C. Improve connectivity from the downtown core and opportunities for usage of the Mike Pusich Douglas Harbor, Treadwell Arena, Mayflower Island, and Savikko Park, encouraging visitors to stay in the area and visit local businesses.	E&PW, P&R, D&H	Long term
D. Designate waterfront land for use to enhance understanding of Alaska Native history in Douglas, in cooperation with the Douglas Indian Association and other organizations.	Manager, Lands, DIA	Long term

Goal 1.5: Provide resources for the community to engage in development decisions through comprehensive public dialogue to reflect all community voices.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Allocate appropriate funding to expand hours of operation and computer access at the Douglas Public Library.	Libraries, Manager	Ongoing
B. Expand the CBJ public Wi-Fi network to include additional hotspots and increase active hours across Douglas.	IT	Short term

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
C. Establish and maintain a Douglas Community website on the CBJ website to provide information about the community, including consultations prior to development decisions, activities and events, local businesses, and neighborhood groups.	City Clerk, DAB	ASAP
D. Develop CBJ policies to ensure the involvement of under-served and under-represented communities in the public process.	SRRC, Manager	Long term
E. Designate Douglas Advisory Board members as community liaisons to attend and report on Planning Commission meetings, Assembly meetings, and the Assembly Public Works and Facilities Committee meetings.	City Clerk, DAB, Assembly	Short term
F. Establish CBJ community-based youth and community outreach committees, as well as a dedicated public website.	City Clerk, Assembly	Long term

Goal 1.6: Use Mt. Jumbo Gym and adjacent maintenance shop located at 4th and D Streets as a multi-purpose community hub.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Relocate the maintenance shop to another location.	P&R	Short term
B. Enhance existing facilities to maintain and expand public uses, including indoor and outdoor activities.	P&R	Short term
C. Support future redevelopment to include housing, such as studio apartments, as well as community spaces.	P&R	Long term



PROSPEROUS COMMUNITY

Goal 2.1: Identify needed services and areas for economic growth.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Use available local and state data to map existing services in the Plan area.	CDD, JEDC	Short term
B. Conduct a community needs assessment to identify and prioritize missing services.	JEDC	Short term
C. Survey existing commercial enterprises to identify what supports are needed to advance more commercial activities.	JEDC, JCC	Short term
D. Survey for underused public properties that could be repurposed and identify potential uses.	CDD	Short term
E. Develop an action plan to address results of community surveys outlined in Goal 2.1.	JEDC	Long term

Goal 2.2: Support small scale tourism.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Market Douglas' natural environment, outdoor lifestyle, performing arts, culture, and history.	CBJ Tourism, Travel Juneau, JEDC, JCC, DIA	Ongoing
B. Develop opportunities for cultural, historical, and eco-tourism.	CBJ Tourism, Travel Juneau, JEDC, JCC, DIA	Long term
C. Develop and permit opportunities for small tour operators offering small group, low impact experiences	CBJ Tourism, P&R	Ongoing

Goal 2.3: Support local entrepreneurs and employers that provide year-round services.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Promote opportunities for businesses and entrepreneurs to address service gaps.	JEDC, JCC	Ongoing
B. Encourage local employers to use the Douglas Community website to promote vacant year-round positions.	JEDC, JCC	Ongoing
C. Promote telecommuting opportunities to those who may consider relocating to Douglas for its small town qualities.	JEDC, JCC	Ongoing
D. Enhance telecommunications services to Downtown Douglas / West Juneau.	DCC&ED Alaska Broadband Office, RCA	Long term
E. Embark on a study to increase parking opportunities, such as cooperative agreements with owners of downtown parking lots to open spaces in off hours.	CDD, JCC	Long term
F. Encourage businesses within residences by making the city code definition of “home occupation” less restrictive.	CDD	Short term

Goal 2.4: Enhance the Mike Pusich Douglas Harbor and surrounding parkland as a community anchor for recreational and economic activity.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Develop new and improve existing public amenities at the harbor, such as paved parking, landscaping, restrooms, and period or artistic lighting improvements.	D&H	Ongoing
B. Facilitate commercial activity designed to attract visitors and residents from other areas of Juneau, such as food trucks, and light, small scale tourism, by providing dedicated vendor space, access to potable water, and other amenities.	D&H, P&R	Long term
C. Diversify public uses at Savikko Park to fully utilize space.	P&R	Long term
D. Coordinate planning efforts for the Mike Pusich Douglas Harbor and Savikko Park, recognizing their proximity and potential for collaboration.	D&H, P&R	Ongoing
E. Support the CBJ Assembly goal to support the Douglas Indian Association's efforts to acquire Mayflower Island from the U.S. Department of Interior.	CBJ, DAB, NA	Short term
F. Install a public use dock at the Mike Pusich Douglas Harbor for recreational and potential commercial use.	D&H	Long term

Goal 2.5: Preserve and expand infrastructure and systems to grow and support economic activity.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Maintain and improve existing and build new roadways and bridge connections to Juneau for access to goods and services and economic opportunities for Douglas residents, and for access to Douglas businesses and events.	E&PW, DOT&PF	Ongoing
B. Maintain and improve community anchors such as theaters and sports arenas, and enhance their connections within the community,	CBJ, Private	Ongoing
C. Actively support Juneau-wide hydroelectric development and other renewable energy projects to capitalize on clean and reasonably priced sources of electricity.	CBJ, JEDC	Ongoing

Goal 2.6: Diversify housing options to support a broad range of current and future Douglas residents.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Examine and eliminate barriers to partnerships, to support housing and economic development opportunities.	CDD, JEDC	Ongoing
B. Incorporate “Missing Middle” housing such as duplexes, triplexes, and rowhouses and innovative housing types such as co-housing.	CDD	Ongoing
C. Maintain and enhance opportunities for liveaboards in the Mike Pusich Douglas Harbor.	D&H	Ongoing
D. Incentivize property owners of vacant lots or buildings to create housing.	CDD, Assessor	Ongoing



HEALTHY AND ACTIVE COMMUNITY

Goal 3.1: Support and enhance access to healthy foods, including local and traditional foods.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Encourage community gardens in parks and neighborhoods.	P&R, JCES, NA	Ongoing
B. As part of a comprehensive plan for Savikko Park and the Mike Pusich Douglas Harbor, develop a growing space in Savikko Park, such as a community garden or another type of managed growing space.	D&H, P&R	Long term
C. Encourage Fruiting Forests.	JCES, DAB, NA, private	Ongoing
D. Include food bank information on the Douglas Community website.	Clerk	Ongoing
E. Encourage the development of a food co-op.	JCES, DAB, NA	Ongoing
F. Encourage the development of a “gleaning” program where excess fresh foods from gardens, farmers markets, grocers, restaurants, events or any other sources in are collected and provided to those in need.	JCES, DAB, NA	Ongoing
G. Develop an emergency plan for supply of food and necessities if Douglas is cut off from the mainland in the future.	CBJ Emergency Programs	Short term

Goal 3.2: Promote and enhance access to community health and wellness.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Work with health care providers to hold health fairs and offer “pop up” clinics to provide access to primary care, dental, behavioral health, emergency, and other public health services.	HRRM, Bartlett, SEARCH	Ongoing
B. Develop a mapping and signage system for recreational programming, community activities and infrastructure. Consider implementing QR codes and utilizing apps and mobile friendly websites to take advantage of changing technologies.	P&R	Long term
C. Use the Douglas Community website to advertise and inform the community about recreational choices, programming and activities, and community initiatives such as walking groups and community bike rides and hikes in Downtown Douglas / West Juneau.	Clerk, DAB, P&R, NA	Ongoing
D. Enhance the CBJ’s Homestead Park to include access to the water and off-street parking.	P&R	Long term

Goal 3.3: Create a pedestrian and bike path connecting West Juneau and Downtown Douglas.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Collaborate with private landowners to develop a public park and community garden connecting Foster Avenue and Simpson Avenue.	P&R, private	Long term
B. Collaborate with private landowners to develop a pathway across Lawson Creek and private property connecting Raven Road with John Street.	P&R, private	Long term

Goal 3.4: Promote a community where people of all backgrounds and identities feel safe and respected.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Expand community access to programs and activities that improve safety such as JPD's CPTED consultations.	JPD, DAB, NA	Ongoing
B. Actively recruit and encourage participation from individuals who belong to underserved communities to participate in groups and committees.	SRRC, DAB	Ongoing
C. Provide public trashcans and pickup to shoreline areas, bus stops, and other high use areas.	E&PW, D&H, P&R	Ongoing
D. Add outdoor or covered seating adjacent to the post office, library, and other community anchors to encourage community dialog.	CBJ	Ongoing
E. Ensure that snow management plans remove snow berms in a timely manner, prioritizing sidewalks, bus stops, and wheelchair accessible spaces.	E&PW, DOT&PF	Ongoing
F. Provide a wheel-chair accessible ramp or boardwalk to the Sandy Beach shore.	P&R	Short term
G. Provide a hose bib in or near the restrooms or shelters at Sandy Beach.	P&R	Short term



CULTURAL AND ARTISTIC COMMUNITY

Goal 4.1: Honor, preserve, and promote the heritage of Downtown Douglas / West Juneau.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Develop educational displays/materials about the Douglas Indian Village that was located at Savikko Park.	P&R, DIA	Long term
B. Partner with tribal, governmental and other organizations on projects that highlight the area's unique cultural and natural history.	CBJ, DIA	Long term
C. Expand the historic districts and use the designation to preserve the character of an individual structure or neighborhood where there is historic, architectural, cultural, and/or geographical significance to Douglas.	CDD	Long term
D. Encourage the maintenance of and public informational signs about the cemeteries along Douglas Highway.	CBJ, DIA	Long term

Goal 4.2: Foster economic growth through arts, culture, creative industries and integrated art that celebrates the diversity of our community and our cultural heritage.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Promote and grow local events such as Gold Rush Days, Douglas Fourth of July and the Christmas Tree Lighting, and create additional events such as “A Taste of Douglas” that appeal to visitors and residents.	DAB, NA	Ongoing
B. Develop and advertise historic preservation opportunities.	HRAC	Ongoing
C. If Mayflower Island is transferred from the federal government, subsequent development should be encouraged to be small scale.	CBJ, DIA, DAB	Long term
D. Provide information on how to incorporate local arts into site development and building design and encourage new developments and substantial renovations to do so.	CDD, JAHC	Long term
E. Develop a mapping and signage system for arts, creative, cultural and historic resources. Consider implementing QR codes and utilizing apps and mobile friendly websites to take advantage of changing technologies.	HRAC, JAHC	Long term

Goal 4.3: Support community well-being through cultural and artistic activities that celebrate diversity and promote inclusivity.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Use public forums and outreach, including the Douglas Community website, to advertise and educate the community about art, music and cultural activities.	DAB, JAHC, DIA	Long term
B. Support partnerships between artists, artistic programs, and cultural organizations.	DAB, JAHC, DIA	Long term



SUSTAINABLE AND GREEN COMMUNITY

Goal 5.1: Sustain economic viability and growth by promoting rehabilitation and reinvestment in existing infrastructure and buildings.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Support preservation and re-use of existing housing to improve and expand the housing supply.	CDD, HRAC	Long term
B. Incentivize redevelopment and renovation of aging properties through tax abatement and revolving loans.	CBJ	Long term
C. Expand existing or create a new locally funded program for rehabilitation and restoration of housing units within historic buildings.	CBJ	Long term

Goal 5.2: Promote access to renewable energy sources, efficiency and new technology that is reliable and affordable to all people.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Implement an EV charging permit program and provide EV charging facilities at CBJ facilities, Heritage Park, and the top of Cordova Street. Encourage or require EV charging facilities in commercial and multi-family developments.	E&PW, P&R	Long term
B. Promote the Douglas Public Library as an information and technology hub of Douglas.	Libraries, DAB	Ongoing
C. Work with business owners on practical recycling and packaging practices.	E&PW, JCOS	Long term
D. Develop incentives and programs to encourage energy efficiency and conservation in both new construction and renovations.	JCOS	Long term

Goal 5.3: Preserve the natural, undeveloped area above 5th Street.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Re-designate the Land Use category of approximately 17 acres of CBJ-owned parcels abutting the 6th Street right of way from Urban Low Density Residential to Conservation Area or Natural Area Park.	Lands	Long term

Goal 5.4: Identify, promote, and encourage proactive solutions and innovations to address the effects of climate change on Infrastructure and life in Douglas.

ACTIONS	IMPLEMENTING PARTNERS	TIMEFRAME
A. Encourage solutions to minimize/address water runoff in major rain events.	JCOS	Long term
B. Study, plan and implement measures to mitigate the impact of landslides, mudslides, and avalanches in Douglas.	E&PW	Long term
A. Research, promote, and incentivize the use of climate change adaptation and mitigation ideas.	JCOS	Long term
C. Encourage and incentivize energy efficient construction such as LEED certified buildings.	CDD, JCOS	Long term
D. Encourage recycling and composting by facilitating drop-off points in Douglas.	E&PW, JCOS	Long term
E. Explore and encourage the feasibility of wind, tidal, solar and other non-polluting technologies in Douglas.	CBJ	Long term

APPENDICES

- Acronyms
- Glossary
- Steering Committee Mapping Exercise
- Additional Maps
- Traffic Calming
- Public Comments
- Adopting Ordinance

ACRONYMS

ACS	American Community Survey
APA	American Planning Association
ASAP	As soon as possible
CBJ	City and Borough of Juneau
CPTED	Crime Prevention Through Environmental Design
CDD	CBJ Community Development Department
CIP	Capital Improvement Project
Comp Plan	Comprehensive Plan
DAB	CBJ Douglas Advisory Board
DCC&ED	Alaska Department of Commerce, Community & Economic Development
D&H	CBJ Docks & Harbors
DIA	Douglas Indian Association
DOT&PF	Alaska Department of Transportation & Public Facilities
E&PW	CBJ Department of Engineering & Public Works
EV	Electric Vehicle
HRAC	CBJ Historic Resources Advisory Committee
HRRM	CBJ Human Resources & Risk Management
JAHC	Juneau Arts and Humanities Council
JPD	Juneau Police Department
JCC	Juneau Chamber of Commerce
JCES	Juneau Cooperative Extension Service
JCOS	Juneau Council on Sustainability
JEDC	Juneau Economic Development Council
Lands	CBJ Lands & Resources
LEED	Leadership in Energy and Environmental Design
NA	Neighborhood Association
P&R	CBJ Parks & Recreation
PC	CBJ Planning Commission
QR	Quick Response
RCA	Regulatory Commission of Alaska
SEARCH	Southeast Alaska Regional Health Consortium
SOA	State of Alaska
SRRC	CBJ Systematic Racism Review Committee

GLOSSARY

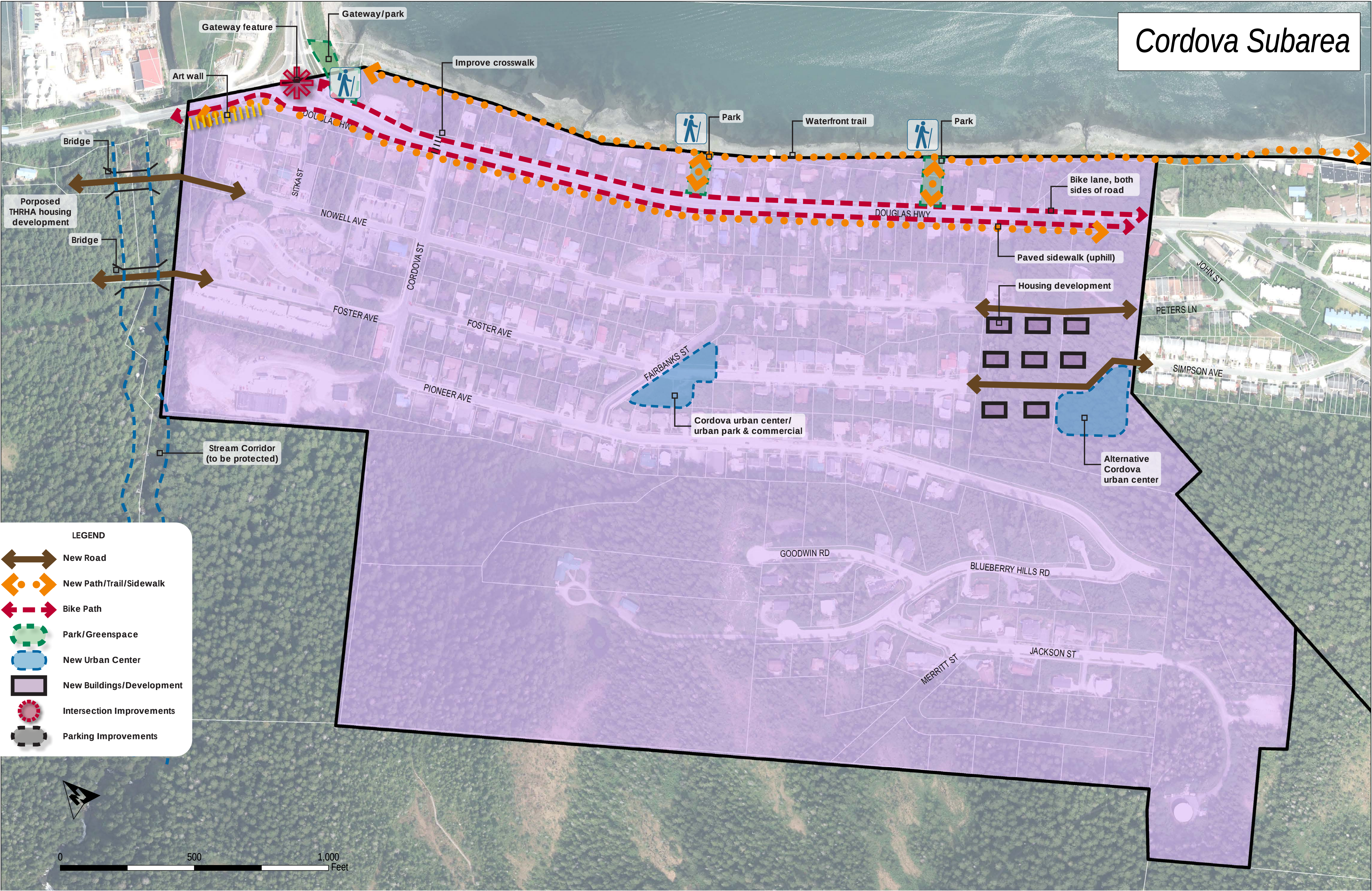
Access point	Any improvement designed for a motor vehicle to travel from or onto a right-of-way including, a driveway, a parking area, or street that intersects an existing street and any similar improvements.
Capital Improvement Project	A capital improvement project involves permanent structural changes to a property or assets, aiming to enhance its value, extend its lifespan or improve its functionality. For local governments, CIPs can include asset upgrades or large scale maintenance work.
Caretaker Residence	An accessory dwelling on a non-residential premises, occupied by the person who oversees the non-residential operation 24 hours a day, and his or her family.
Commercial	Occupied with or engaged in commerce or work intended for commerce.
Common Wall Structure	A single-family dwelling attached by a common wall to one other single-family dwelling on a separate lot.
Community Garden	A private or public facility for the cultivation of fruits, flowers, vegetables, or ornamental plants by more than one person or family.
Community Needs Assessment	A systematic process used to identify the strengths, weaknesses, and unmet needs of a specific community.
Conservation Area	CBJ-owned Parks and Recreation Department-managed lands with recognized high value environmental qualities that are set aside for the protection and management of the natural environment with recreation, such as fishing, hiking and non-motorized boating, as a secondary objective. These may be non-anadromous fish watercourses or areas adjacent to anadromous fish streams that have been designated Stream Protection Corridors (SC), greenbelts, or high value wetlands. No development should be permitted other than structures, roads and trails necessary for the maintenance and protection of the resources or for managed public access for education and passive recreation purposes.
Density	The number of dwelling units permitted per net acre of land.
Duplex	A building on a single lot containing two dwelling units, each of which, except for a common stairwell exterior to both dwelling units, is separated from the other by an unpierced wall extending from floor to roof or an unpierced ceiling and floor extending from exterior wall to exterior wall.
Dwelling	A building or portion thereof, used exclusively for human habitation.

Food Co-op	A nonprofit enterprise that is collectively owned and operated to purchase and distribute food among its members, without a profit motive.
Fruiting Forest	A type of garden where you grow many different fruits, nuts, herbs, and even vegetables. It is designed to mimic a natural forest and has many different layers, from trees to shrubs, ground cover, plants, vines, and more.
Home occupation	An activity carried out for gain by a resident, conducted as an accessory use in the resident's dwelling unit.
Hose bib	An outdoor faucet designed to be connected to a garden hose.
In-fill	Development or redevelopment of land that has been bypassed, remained vacant, or is underused as a result of the continuing urban development process.
Land Use	A description of how land is occupied or used.
Midrise	A multiple-family dwelling located in a building containing four to seven stories.
Missing Middle	Refers to a range of housing types that fit between single-family detached homes and mid-to-high-rise apartment buildings.
Mixed-Use	Zoning district established to accommodate a mix of appropriate commercial and residential uses.
Motorized transportation network	A system of interconnected roads and pathways designed for vehicles powered by engines.
Multi-family dwelling	A building designed for or occupied by three or more families.
Natural Area Park	CBJ-owned lands characterized by areas of natural quality designed to serve the entire community by providing fish and wildlife habitat, open space/natural areas, access to water, and opportunities for passive and dispersed recreation activities. No development should be permitted other than structures, roads and trails necessary for the maintenance and protection of the resources or for managed public access for education and passive recreation purposes; this may include parking areas, educational kiosks, cabins, rest stations and similar convenience services for the recreational enthusiast.
Non-motorized transportation network	A system of infrastructure designed to facilitate walking, biking, and other human-powered modes of travel.
Right-of-Way	A defined area of land, including surface, overhead and underground space, reserved or granted by deed, easement or dedication for a street, alley, utility, walkway, sidewalk, or other public ways.
Single-family dwelling	A detached dwelling which is designed for and occupied by not more than one family.

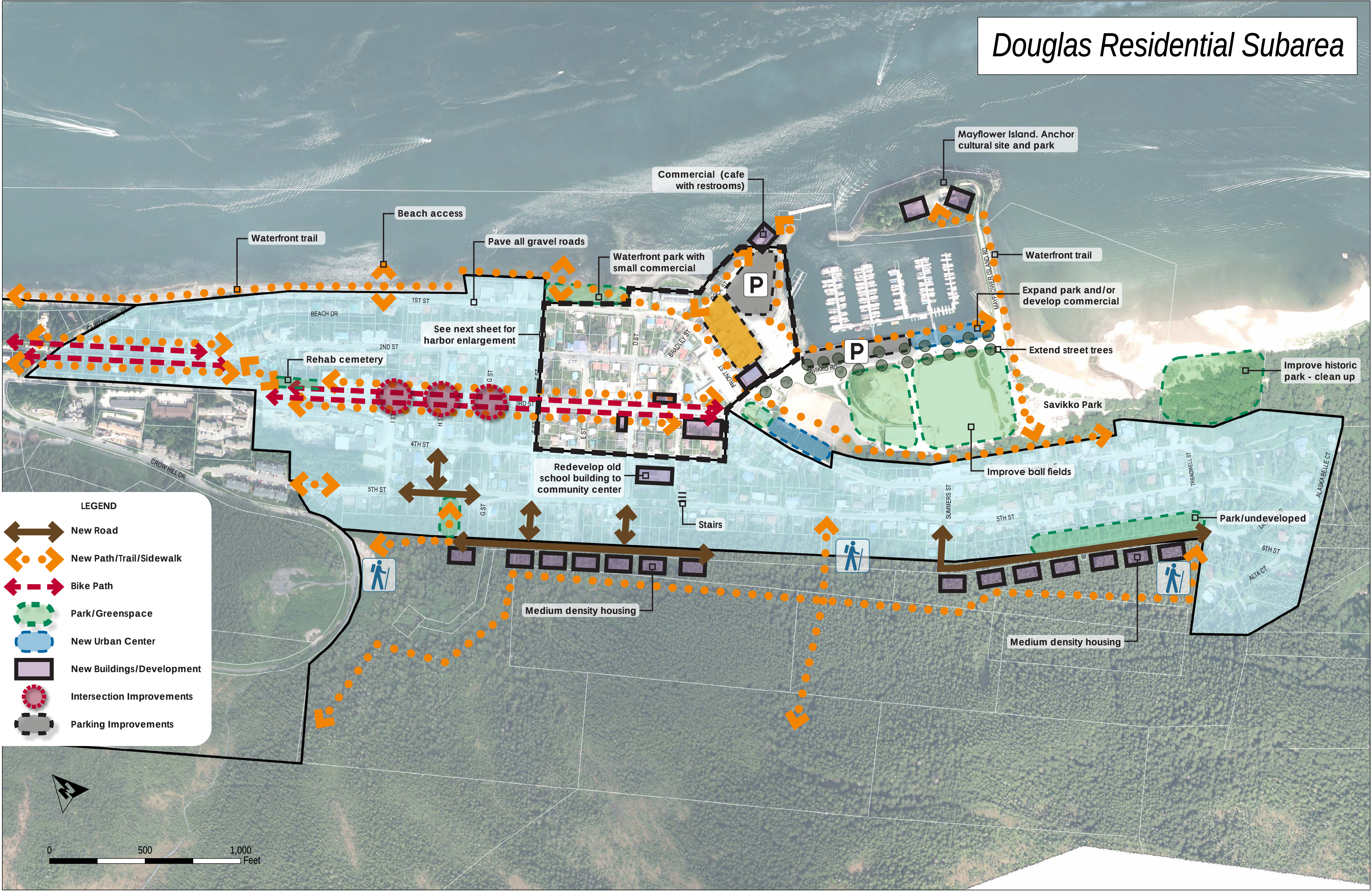
Telecommuting	The relocation of work activities to a home or satellite work site to eliminate or reduce the distance traveled in a commute trip by at least half.
Traffic Calming	A concept fundamentally concerned with reducing the adverse impacts of motor vehicles on built-up areas. Usually involves reducing vehicle speeds, providing more space for pedestrians and cyclists, and improving the local environment.
Travel Corridor	A route or path along which people or animals regularly travel from one place to another.
Undeveloped Right-of-Way	Undeveloped rights-of-way are areas of land, including surface, overhead, and underground space, reserved or granted by deed, easement, or dedication for a street, alley, utility, walkway, sidewalk, or other public ways that have not been improved with paving.
Uplands	Drainages, aquifers, and lands, the use of which would have a direct and significant impact on coastal water.
Urban Low Density Residential	Characterized by urban or suburban residential lands with detached single-family units, duplex, cottage, or bungalow housing, zero-lot-line dwelling units, and manufactured homes on permanent foundations at densities of one to six units per acre. Any commercial development should be of a scale consistent with a single-family residential neighborhood.
Waterfront	The land-water edge and the immediately adjacent property providing access to it.
Wayfinding	Informational system of signs, colors, and other design elements that helps people navigate space, often in an urban environment.
Zoning District	A section of the city in which zoning regulations and standards are uniform.

ZONING DISTRICTS IN THE AREA BOUNDARY

D-5	The D-5, residential district, is intended to accommodate primarily single-family and duplex residential development at a density of five dwelling units per acre.
D5 (T) D18	D-5 transitioning to D-18 after conditions are met
D-18	The D-18, residential district, is intended to accommodate primarily multifamily development at a density of 18 dwelling units per acre. This is a high density multi-family zoning district intended to accommodate midrise-type development.
GC	The GC, general commercial district, is intended to accommodate most commercial uses. Commercial activities are permitted outright in the zone except for those few uses that are listed as conditional uses to ensure compatibility. Residential development is allowed.
LC	The LC, light commercial district, is intended to accommodate commercial development that is less intensive than that permitted in the general commercial district. Light commercial districts are primarily located adjacent to residential zones. Residential development is allowed.
WC	The WC, waterfront commercial district, is intended to provide both land and water space for uses which are directly related to or dependent upon a marine environment. Residential development is allowed.
WI	The WI, waterfront industrial district, is intended for industrial and port uses which need or substantially benefit from a shoreline location. Residential uses are limited to caretaker residences.



The Steering Committee held a 2023 public mapping exercise to develop guiding recommendations for future Land Uses in four subareas



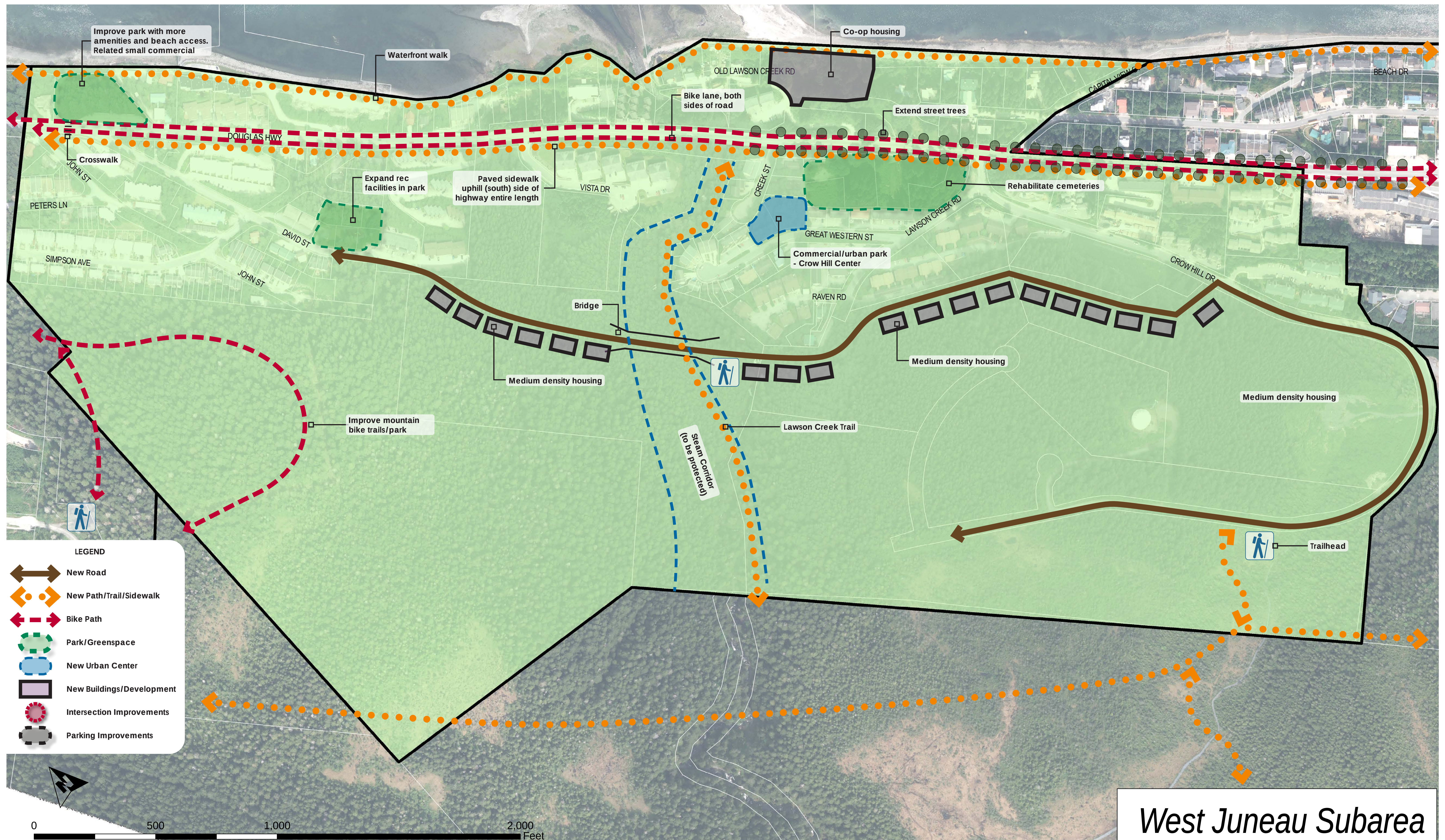
The Steering Committee held a 2023 public mapping exercise to develop guiding recommendations for future Land Uses in four subareas

SOUTH DOUGLAS & WEST JUNEAU DEVELOPMENT PLAN

Downtown Douglas

REV. 08/09/2023





The Steering Committee held a 2023 public mapping exercise to develop guiding recommendations for future Land Uses in four subareas

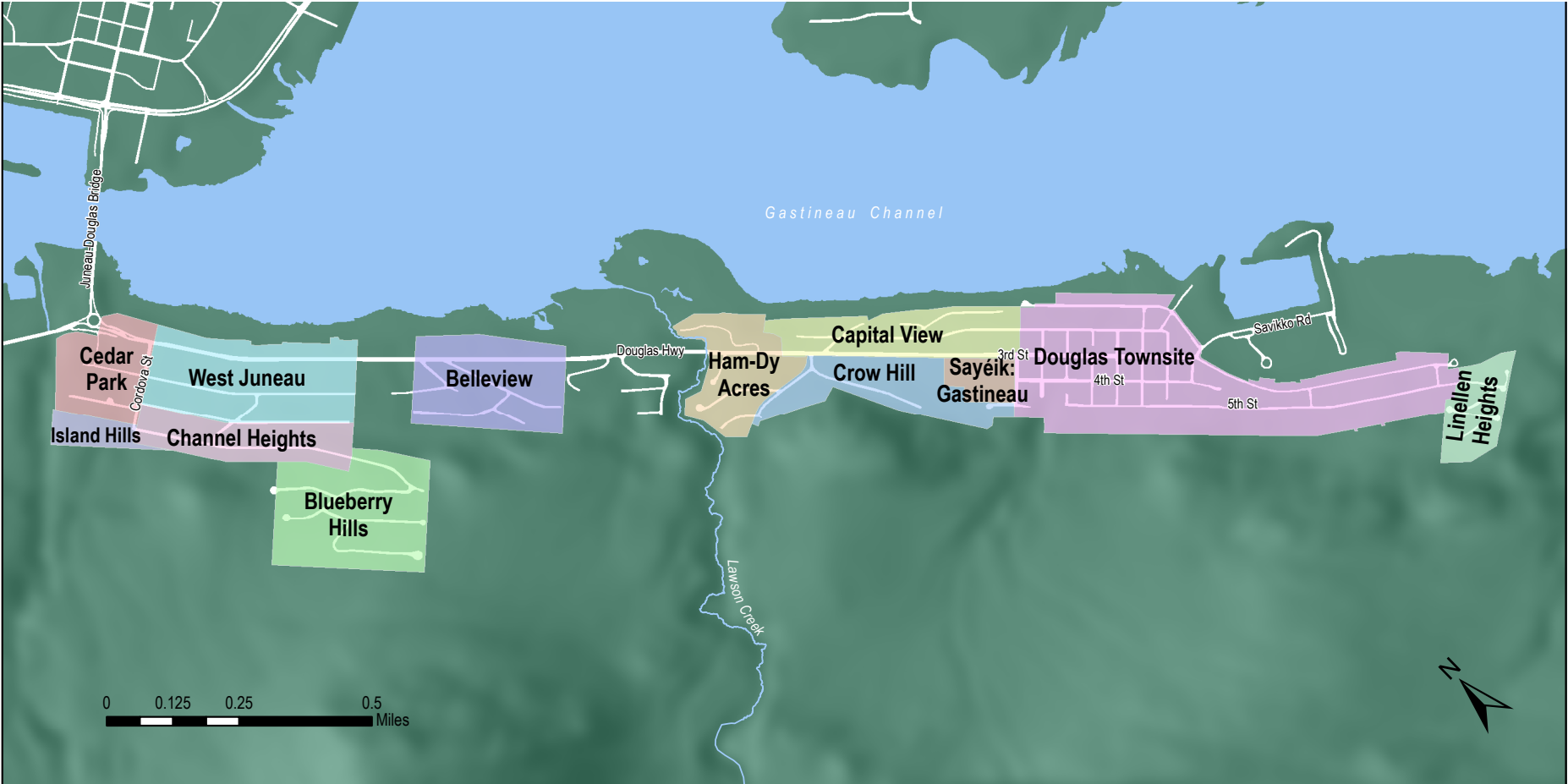
SOUTH DOUGLAS & WEST JUNEAU DEVELOPMENT PLAN

West Juneau Subarea

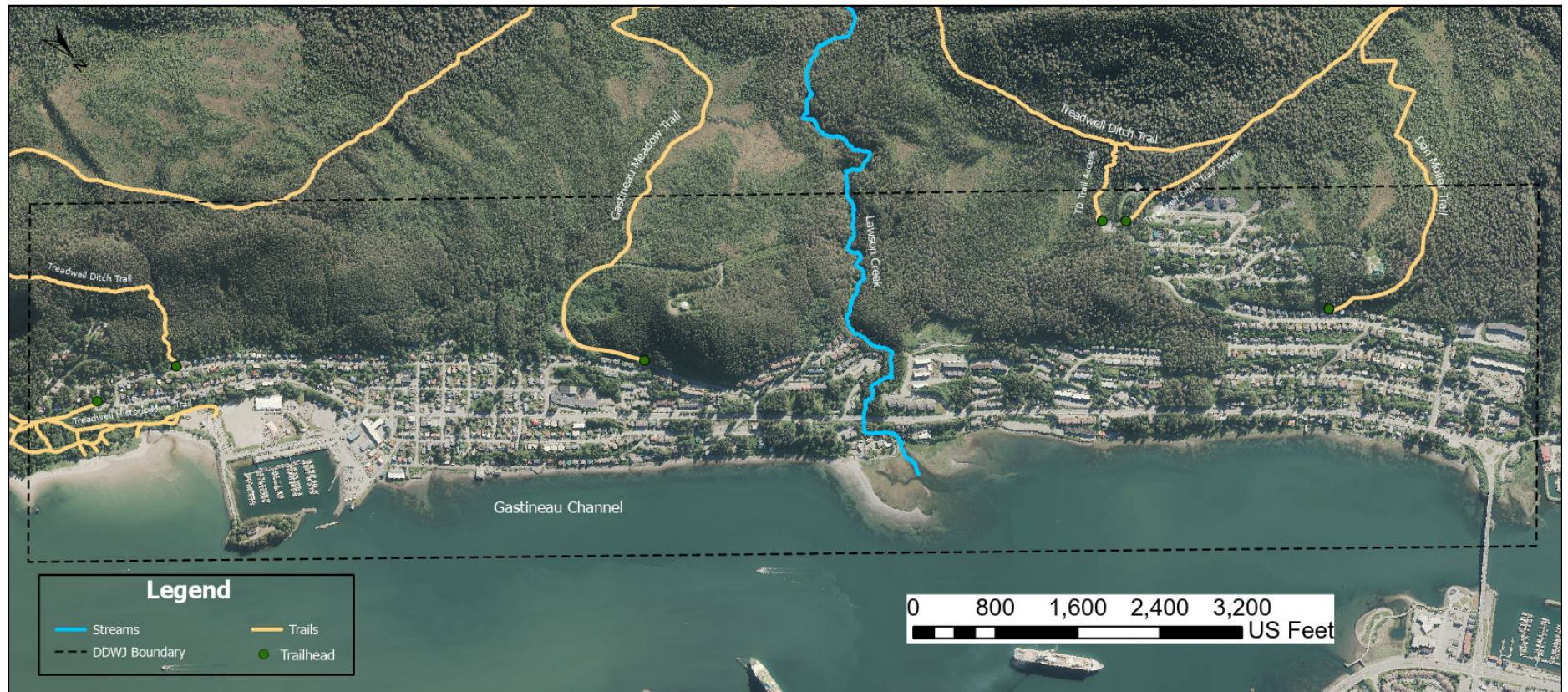
REV. 09/09/2023



MAP 6: DOWNTOWN DOUGLAS/WEST JUNEAU NEIGHBORHOODS

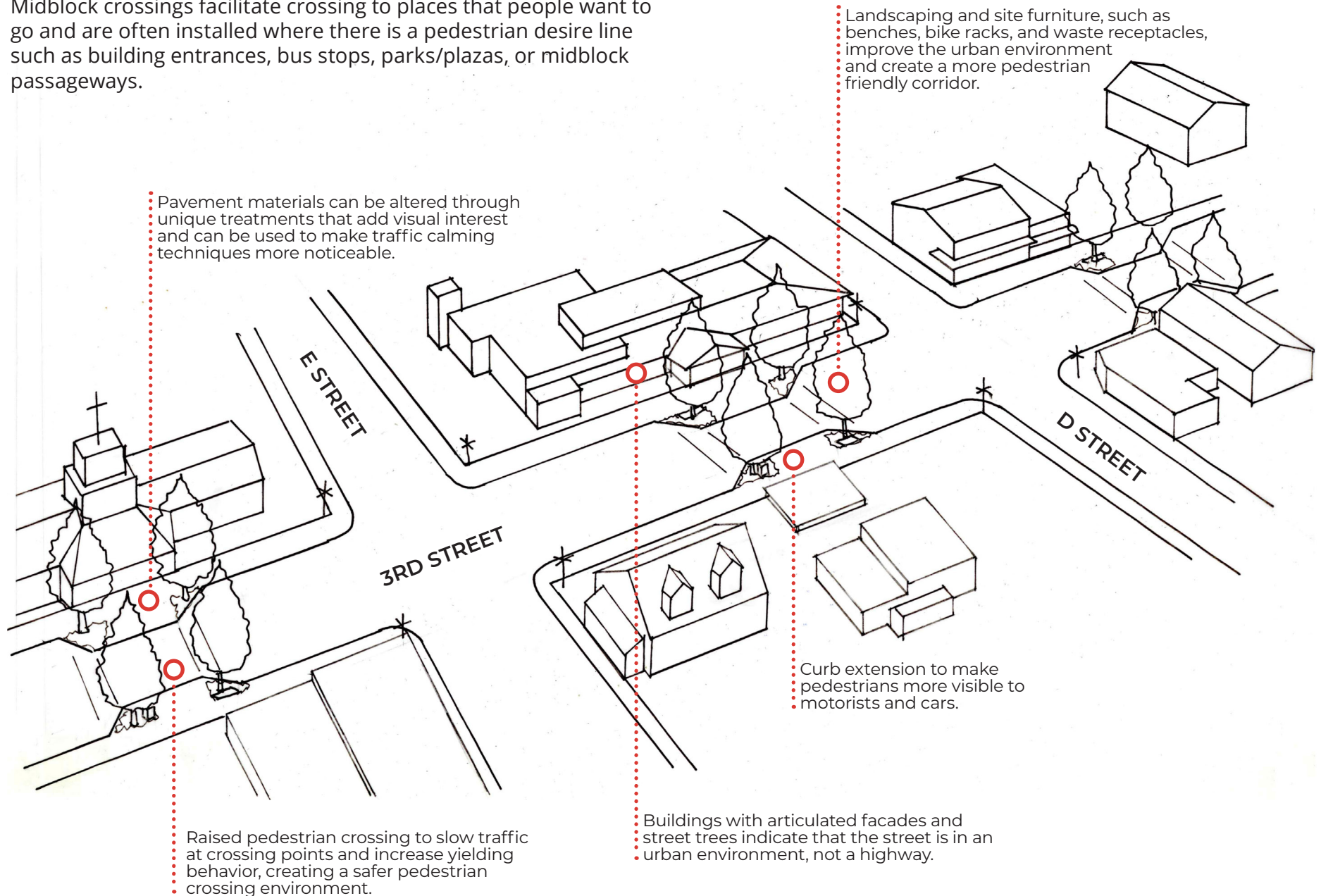


MAP 7: CURRENT TRAIL MAP



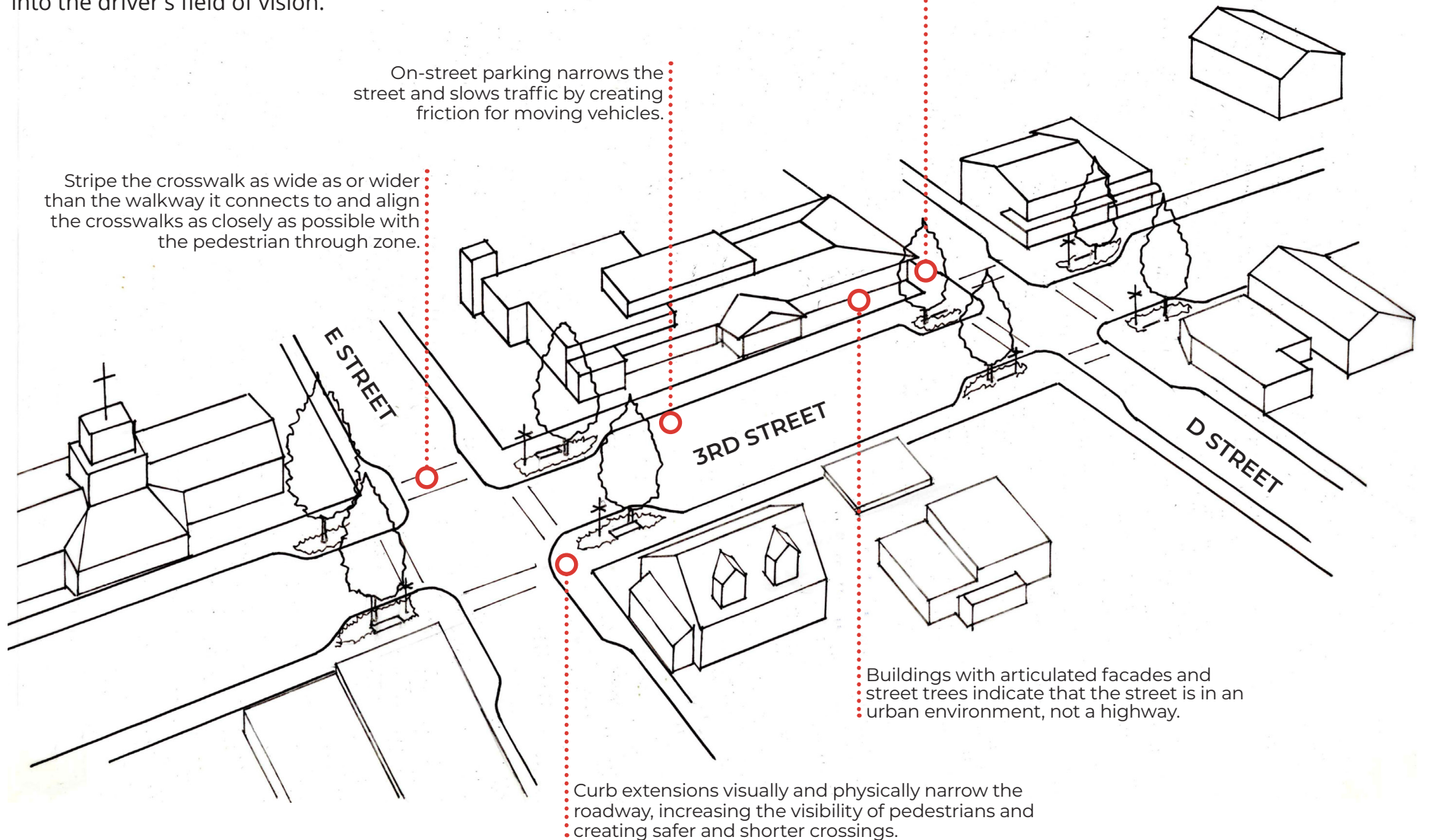
TRAFFIC CALMING: EXAMPLE OF MIDBLOCK CROSSINGS

Midblock crossings facilitate crossing to places that people want to go and are often installed where there is a pedestrian desire line such as building entrances, bus stops, parks/plazas, or midblock passageways.



TRAFFIC CALMING: EXAMPLE OF CONVENTIONAL CROSSINGS

Conventional crossings are crosswalks at intersections. These should be designed to offer as much comfort and protection to pedestrians as possible. Best practices include keeping them as compact as possible and facilitating eye contact by moving pedestrians directly into the driver's field of vision.





Port of Juneau

155 Heritage Way • Juneau, AK 99801
(907) 586-0292 Phone • (907) 586-0295 Fax

From: Don Etheridge
Chair, Docks & Harbors Board of Directors

To: Downtown Douglas/West Juneau Area Plan Steering Committee

Date: June 3rd, 2025

Re: BOARD COMMENTS TO AREA PLAN

On behalf of the CBJ Docks & Harbors Board, thank you for your multi-year effort to create the Downtown Douglas/West Juneau Area Plan. We were pleased that Board Member Annette Smith was able to contribute to the planning and final product. The Board provides the following comments to your April 28, 2025 draft.

1. We believe that the formal name of the Douglas Harbor should be recognized at some point in the Plan: Mike Pusich Douglas Harbor
2. "Limited or small-scale tourism" is used throughout the Plan. This description probably needs a more detailed description to this goal. Please know that Docks & Harbors is an Enterprise of the City & Borough of Juneau. This requires self-generating revenues or competing for project funding every five years under the 1% Sales Tax Initiative to improve harbor infrastructure. Docks & Harbors is supportive of expanding Douglas Harbor services and facilities, but we are limited by available fund balances and grant opportunities.
3. Under goal 1.1, Action Item B: *Maintain and improve the Douglas Harbor for access to commercial fishing and recreation activities*. Please know in the past 25 years, Docks & Harbors and partners have invested over \$40M and completed 12 major construction projects and numerous smaller infrastructure improvements in Douglas Harbor. This includes major dredging needed to construct Floats D & E as well as maintenance dredging to recapitalize A, B and C Floats. Recent improvements have included portable sewer pump out services offered at no cost and security lighting improvements in the parking lot. We have plans for greater aesthetic improvements with heated bathrooms, paving, lighting and landscaping, but do not currently have funding to proceed. A more comprehensive list of the work Docks & Harbors has executed includes:
 - a. 2001 – Douglas Harbor Uplands and Moorage Expansion – Phase I
 - b. 2001 – Douglas Harbor Uplands and Moorage Expansion – Phase 2
 - c. 2002 – Douglas Harbor Log Boom Breakwater
 - d. 2003 - Douglas Harbor Uplands and Moorage Expansion – Phase 3
 - e. 2005 – Douglas Harbor Sewer Pump out
 - f. 2008 – Douglas Harbor City Dock Demolition (Required to install the new breakwater)
 - g. 2008 – Douglas Harbor Floating Breakwater

- h. 2009 – Douglas Harbor Rubble Mound Breakwater Extension
 - i. 2015 – Old Douglas Harbor Demolition
 - j. 2015 – Douglas Harbor Renovation
 - k. 2018 – Douglas Harbor Sewer Barge
 - l. 2020 – Douglas Harbor Anodes
 - m. 2023 – Douglas Trailer Lot Resurfacing with recycled asphalt
 - n. 2024 – Douglas Harbor (parking lot & near gangways) and Launch Ramp Installed new Lighting (LED luminaires)
4. The Docks & Harbors Board would be interested in the vision provided in Goal 1.4 for *access points* as well as *connectivity* as it pertains to the Douglas Harbor.
 5. Under Goal 2.4 Action E: *Install a public use dock at the Douglas Harbor for recreation and potential commercial use.* The Board would like to receive greater detail as to where this dock could be located.
 6. Under Goal 2.6 Action C: *Maintain and enhance opportunities for liveaboards in the Douglas Harbor.* Docks & Harbors provides the most liberal liveaboards opportunities in the Pacific NW and provides the most northern year-round potable water system in a North American small boat harbor. Our vision to provide heated bathrooms, including showers, will be pursued once funding can be secured. Please know that Docks & Harbors is directed under CBJ Code to favor vessels engaged in transportation:

It is hereby declared to be the intent of this title to favor the use of the facilities of the boat harbor by commercial fishermen, government vessels, commercial vessels in trade and commerce, and pleasure craft, and by the general public at large. It is further the intent of this title to prevent and discourage the use of the facilities of the boat harbor by boats which have been abandoned by their owners to the point of becoming derelicts as defined in chapter 85.05 or becoming a charge and nuisance to the City and Borough, the port director, and the general public, or which are unsafe, or which are not used, or are not fit to be used, regularly for transportation on the water. (85.10.030)
 7. Regarding the request to enhance harbor opportunities for liveaboard, commercial and recreational users, and installation of a public use dock, perhaps the Plan should explicitly add an expansion of Mike Pusich Douglas Harbor as a goal. This language could be helpful to leverage community and political support for expansion. Please recognize that the Plan's support of the transfer of Mayflower Island from CBJ control would not be in alignment of developing new opportunities at Douglas Harbor by Docks & Harbors.

#

From: [Alan Steffert](#)
To: [S. Douglas / W. Juneau Area Plan](#)
Subject: Comment on draft plan goal 5.3
Date: Thursday, May 1, 2025 7:57:41 PM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

I disagree with goal 5.3 as currently worded. It reads as though it is against developing the platted ROW and lots that will be 6th Street Douglas. This sounds like nimby-ism. This area is low hanging fruit for development as a new housing area. It is already platted, has water, sewer and electricity close by, and is adjacent to already developed neighborhoods. If you are serious about increasing housing in Juneau, and in Douglas specifically, then this area should be developed. If 5th st residents don't want a lot above then developed they should buy it at market price and do nothing with it. I recommend that goal 5.3 be edited to be clear that preserved greenspace would be above the platted lots of 6th st, not above 5th st.

Alan

From: [Eric Caldwell](#)
To: [S. Douglas / W. Juneau Area Plan](#)
Subject: Public Comment
Date: Friday, May 2, 2025 3:57:23 AM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Thank you for the inclusion of Goal 5.3 in the Downtown Douglas/West Juneau Plan. Some residents of 5th Street are already dealing with impacts related to erosion and drainage. Rezoning 6th Street to Conservation Area will make the kinds of property-damaging mudslides we've seen in the Twin Lakes area less likely to occur in this neighborhood.

Recent construction on both 5th Street and St. Ann's between Summers and Treadwell has made the already limited parking in these residential neighborhoods increasingly scarce. I am not aware of what the term "Natural Area Park" encompasses, but I do not see how rezoning 6th Street to any kind of "park" is practical, given the neighborhood's inability to support current vehicular activity - a level that will only increase with the construction of the cultural center at St. Ann's and Treadwell. The recent decommissioning of the Mount Jumbo Trailhead seems to indicate that the City is already aware that this largely residential neighborhood does not have the parking infrastructure to support such recreational activity.

I strongly encourage the City's efforts to rezone 6th Street as a Conservation Area, both to protect existing residents and the wildlands in our backyards.

Sincerely,
Eric Caldwell
319 5th Street
Douglas, AK 99824

From: [Jeffrey Smith](#)
To: [S. Douglas / W. Juneau Area Plan](#)
Subject: Feedback on the Draft Douglas/West Juneau Area Plan
Date: Wednesday, May 7, 2025 11:14:12 AM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Dear Committee Members,

Thank you for your work on the draft Douglas/West Juneau Area Plan and for volunteering your time to be a part of guiding the future of our neighborhoods. I appreciate the thought and care that has gone into the planning process. However, after reviewing the draft plan, I'm writing to express my deep disappointment in the lack of tangible, proactive solutions to address what is arguably Juneau's most urgent and defining challenge: housing.

Our city is facing a full-blown housing crisis. Many people who work full-time jobs — including those with families and those supporting people with disabilities — are on the verge of homelessness or are being priced out of Juneau entirely. I personally know two families for whom this applies. They have one member who works full-time and supports another family member with a disability, and despite doing everything “right,” they came dangerously close to living on the streets within the past year. I also know many people who would love to own homes here but simply cannot afford to — they're trapped in a cycle of high rents that essentially pay someone else's mortgage, without a path to stability or ownership.

In this context, the committee's failure to present bold or specific housing opportunities — or even a clear commitment to finding ways to make them happen — is disheartening. At to be clear, I understand that these are volunteers doing the best they can, and here I am sitting on the sidelines providing critique of their work. But I hope these comments can encourage a deeper look at the housing plan.

The 6th Street corridor is a prime example. Rather than asking, “Why not here?” the current tone of the plan and much of the discussion around it seems to focus on all the reasons why development should be avoided. If we only ever seek to preserve the character of our neighborhoods exactly as they are, we will fail the very people our community needs most: working and middle-class teachers, caregivers, and young families.

If people are saying, “I don't want to see homes from my backyard or lose my direct access to the forest” that's not a legitimate planning concern — that's a personal preference. That's not to say there not legitimate concerns with 6th street development, just that we need to explore it in good faith.

Instead of identifying barriers, the committee should be generating solutions. For example:

- What if we reimaged the underutilized Jumbo Gym as a mixed-use development — with childcare or community recreation on the ground floor and small apartments or housing above?
- What if we worked with the CBJ to improve infrastructure access to land like the 6th Street corridor and made that a model of well-integrated development?
- What if we led with a “yes, if...” approach rather than a “no, because...” mentality?

We need creativity. We need sacrifice. We need a willingness to accept change — not because we don't love our neighborhoods, but because we love them enough to want to see them thrive not just for us and not just for now, but for the future.

Respectfully,
Jeff Smith
900 1st Street #10, Douglas
907-713-5135

OPEN HOUSE STICKER EXERCISE							
Goal	Action	Language	Yes	No	Total Votes	Public Comment	Public Comment
1.1	A	Maintain and improve roadways and bridge connections to Juneau for access to goods and services and economic opportunities for Douglas residents, and for access to Douglas businesses and events by off-Island patrons.	3	0	3	Remove the new parking restriction signs on Douglas Hwy. They are more restrictive than downtown & in front of residential	
1.1	B	Maintain and improve the Douglas Harbor for access to commercial fishing and recreational activities.	6	0	6	Need more moorage for recreational boats less than 30 ft. and more transient	Ensure adequate recreational boat trailer parking is
1.1	C	Develop an alternative route to improve emergency response and reduce congestion at stressed intersections.	1	1	2		
1.1	D	Encourage and participate in ongoing Juneau-wide discussions about a second crossing between Douglas and Juneau.	8	1	9		
1.1	E	Allocate appropriate funding for winter maintenance of streets.	8	0	8	Snow depository in the ball field next to Montessori school needs to either have a curfew or move further away from residences. Loaders & tailgate slamming all night is keeping everyone in the lower St. Anns area up	
1.1	F	Include CIP proposal to pave existing streets in Downtown Douglas / West Juneau to reduce maintenance costs and improve air quality.	4	0	4		

1.2	A	Build and maintain stair connections to provide pedestrian links between streets and access to properties where slopes make road or sidewalk connections impractical.	4	1	5	Make this less specific - pedestrian connections lot neighborhoods can be bridges, new paths, stair	
1.2	B	Implement traffic calming measures along Douglas Hwy / 3rd Street to improve pedestrian and nonmotorized transportation safety.	1	1	2	Lighted crossing at Crow Hill also	What are traffic calming measures?
1.2	C	Invest in bicycle and pedestrian infrastructure.	19	1	20		
1.2	D	Allocate appropriate funding for proper winter maintenance of sidewalks and bike lanes.	10	1	11		
1.2	E	Add crossing lights to existing crosswalks at the Douglas Hwy and Cordova Street intersection and 3rd Street and 1st Street by the Sayéik: Gastineau Community	13	1	14	Please try to install flashing lights /other high visibility crossing at Cordova &	
1.2	F	Preserve existing wildlife pathways or create alternative pathways to minimize human/wildlife interactions.	6	1	7		
1.3	A	Relocate the Parks & Recreation Facilities Maintenance Shop to another location.	6	0	6		
1.3	B	Enhance existing facilities to maintain and expand public uses, including indoor and outdoor activities.	4	0	4		
1.4	A	Identify potential access points to the shoreline along Gastineau Channel and develop a waterfront trail linking West Juneau to Downtown Douglas.	13	1	14		
1.4	B	Develop a wayfinding plan to guide users to safe and appropriate routes to the waterfront.	0	0	0		
1.4	C	Improve connectivity from the downtown core and opportunities for usage of the Douglas Harbor, Treadwell Arena, Mayflower Island, and Savikko Park, encouraging visitors to stay in the area and visit local businesses.	2	0	2	No to encouraging more overnight Airbnb or Hotels	

1.4	D	Designate waterfront land for use to enhance understanding of Alaska Native history in Douglas, in cooperation with the DIA and other organizations.	5	0	5		
1.5	A	Allocate appropriate funding to expand hours of operation and computer access at the Douglas Public Library.	4	0	4		
1.5	B	Expand the CBJ public Wi-Fi network to include additional hotspots and increase active hours across Douglas.	4	0	4		
1.5	C	Establish and maintain a Douglas Community website on the CBJ website to provide information about the community, including consultations prior to development decisions, activities and events, local businesses, and neighborhood groups.	10	0	10		
1.5	D	Develop CBJ policies to ensure the involvement of under-served and under-represented communities in the public process.	3	0	3		
1.5	E	Designate Douglas Advisory Board members as community liaisons to attend and report on Planning Commission meetings, Assembly meetings, and the Assembly Public Works and Facilities Committee meetings	10	0	10		
1.5	F	Establish CBJ community-based youth and community outreach committees, as well as a dedicated public website.	5	0	5		
1.6	A	Relocate the Parks & Recreation Facilities Maintenance Shop to another location.	2	14	16	People likely don't know the difference from CBJ Maintenance Building and	If you mean Jumbo Gym call it that

1.6	B	Enhance existing facilities to maintain and expand public uses, including indoor and outdoor activities.	13	0	13	Suggest a mixed makerspace & activity center, arts & science + innovation/technologies at	
2.1	A	Use available local and state data to map existing services in the Plan area.	0	0	0		
2.1	B	Conduct a community needs assessment to identify and prioritize missing services.	12	0	12		
2.1	C	Survey existing commercial enterprises to identify what supports are needed to advance more commercial activities.	0	0	0		
2.1	D	D. Survey for underused public properties that could be repurposed and identify potential uses.	3	0	3		
2.1	E	Develop an action plan to address results of community surveys outlined in Goal. 2.1.	0	0	0		
2.2	A	Market Douglas' natural environment, outdoor lifestyle, performing arts, culture, and history.	0	8	8		
2.2	B	Develop opportunities for cultural, historical, and eco-	0	4	4		
2.2	C	Develop and permit opportunities for small tour operators offering small group, low impact experiences	3	15	18	For now tourism operations, have a resident review committee to provide	What is the definition of "small scale" tourism? Can
2.3	A	Promote opportunities for businesses and entrepreneurs to address service gaps.	4	0	4		
2.3	B	Encourage local employers to use the Douglas Community website to promote vacant year-round positions.	2	0	2		
2.3	C	Promote telecommuting opportunities to those who may consider relocating to Douglas for its small town qualities.	0	0	0		
2.3	D	Enhance telecommunications services to Downtown Douglas / West Juneau.	1	0	1		

2.3	E	Embark on a study to increase parking opportunities, such as cooperative agreements with owners of downtown parking lots to open spaces in off hours.	2	0	2		
2.3	F	Encourage businesses within residences by making the city code definition of “home occupation” less restrictive.	1	3	4		
2.4	A	Develop new and improve existing Douglas Harbor public amenities, such as paved parking, landscaping, restrooms, and period or artistic lighting improvements.	4	0	4	Add a second sheet of ice at Treadwell Arena	
2.4	B	Facilitate commercial activity designed to attract visitors and residents from other areas of Juneau, such as food trucks, and light, small scale tourism, by providing dedicated vendor space, access to potable water, and other	4	10	14	More amenities for Juneau locals year-round	
2.4	C	Diversify public uses at Savikko Park to fully utilize space.	6	0	6		
2.4	D	Coordinate planning efforts for the Douglas Harbor and Savikko Park, recognizing their proximity and potential for	1	0	1		
2.4	E	Support DIA’s efforts to acquire Mayflower Island.	3	10	13		
2.4	F	Install a public use dock at the Douglas Harbor for recreational and potential commercial use.	2	6	8		
2.5	A	Maintain and improve existing and build new roadways and bridge connections to Juneau for access to goods and services and economic opportunities for Douglas residents, and for access to Douglas businesses and events.	1	5	6		
2.5	B	Maintain and improve community anchors such as theaters and sports arenas, and enhance their connections within the community,	9	0	9		
2.5	C	Actively support Juneau-wide hydroelectric development and other renewable energy projects to capitalize on clean and reasonably priced sources of electricity.	12	0	12		

2.6	A	Examine and eliminate barriers to partnerships, to support housing and economic development opportunities.	4	3	7		
2.6	B	Incorporate “Missing Middle” housing such as duplexes, triplexes, and rowhouses and innovative housing types such	7	7	14		
2.6	C	Maintain and enhance opportunities for liveaboards in the Douglas Harbor.	4	4	8		
2.6	D	Incentivize property owners of vacant lots or buildings to create housing.	5	6	11	Better permitting	
3.1	A	Encourage community gardens in parks and neighborhoods.	12	0	12		
3.1	B	As part of a comprehensive plan for Savikko Park and the Douglas Harbor, develop a growing space in Savikko Park, such as a community garden or another type of managed	13	0	13		
3.1	C	Encourage Fruiting Forests.	5	0	5		
3.1	D	Include food bank information on the Douglas Community we	4	0	4		
3.1	E	Encourage the development of a food co-op.	7	0	7		
3.1	F	Encourage the development of a “gleaning” program where excess fresh foods from gardens, farmers markets, grocers, restaurants, events or any other sources in are collected and provided to those in	9	0	9		
3.1	G	Develop an emergency plan for supply of food and necessities if Douglas is cut off from the mainland in the	1	0	1	There are so many boats we wouldn’t really be cut off!	
3.2	A	Work with health care providers to hold health fairs and offer “pop up” clinics to provide access to primary care, dental, behavioral health, emergency, and other public health	4	2	6	This is best practice for serving high needs individuals	
3.2	B	Develop a mapping and signage system for recreational programming, community activities and infrastructure. Consider implementing QR codes and utilizing apps and mobile friendly websites to take advantage of changing technologies.	1	0	1		

3.2	C	Use the Douglas Community website to advertise and inform the community about recreational choices, programming and activities, and community initiatives such as walking groups and community	2	0	2		
3.2	D	Enhance the CBJ's Homestead Park to include access to the water and off-street parking.	2	2	4		
3.3	A	Collaborate with private landowners to develop a public park and community garden connecting Foster Avenue and	10	6	16		
3.3	B	Collaborate with private landowners to develop a pathway across Lawson Creek and private property connecting Raven Road with John Street.	16	8	24		
3.4	A	Expand community access to programs and activities that improve safety such as JPD's CPTED consultations.	0	0	0	?	
3.4	B	Actively recruit and encourage participation from individuals who belong to underserved communities to participate in groups and committees.	3	0	3		
3.4	C	Provide public trashcans and pickup to shoreline areas, bus stops, and other high use areas.	13	0	13		
3.4	D	Add outdoor or covered seating adjacent to the post office, library, and other community anchors to encourage	3	0	3		
3.4	E	Ensure that snow management plans remove snow berms in a timely manner, prioritizing sidewalks, bus stops, and wheelchair accessible spaces.	12	0	12	Maybe every other year switch which side of the street snow is plowed to.	
3.4	F	Provide a wheel-chair accessible ramp or boardwalk to the Sandy Beach shore.	7	2	9		
3.4	G	Provide a hose bib in or near the restrooms or shelters at Sandy Beach.	5	0	5		
4.1	A	Develop educational displays/materials about the Douglas Indian Village that was located at Savikko Park.	10	0	10		

4.1	B	Partner with tribal, governmental and other organizations on projects that highlight the area's unique cultural and natural	5	0	5		
4.1	C	Expand the historic districts and use the designation to preserve the character of an individual structure or neighborhood where there is historic, architectural, cultural, and/or geographical	1	0	1		
4.1	D	Encourage the maintenance of and public informational signs about the cemeteries along Douglas Highway.	9	0	9		
4.2	A	Promote and grow local events such as Gold Rush Days, Douglas Fourth of July and the Christmas Tree Lighting, and create additional events such as "A Taste of Douglas" that appeal to visitors and residents.	8	0	8		
4.2	B	Develop and advertise historic preservation opportunities.	0	1	1		
4.2	C	If Mayflower Island is transferred from the federal government, subsequent development should be encouraged to be small scale.	10	4	14	Make Mayflower Island a public park.	
4.2	D	Provide information on how to incorporate local arts into site development and building design and encourage new developments and substantial renovations to do so.	3	0	3		
4.2	E	Develop a mapping and signage system for arts, creative, cultural and historic resources. Consider implementing QR codes and utilizing apps and mobile friendly websites to take advantage of changing technologies.	2	0	2		
4.2	F	Develop an emergency plan for supply of food and necessities if Douglas is cut off from the mainland in the	10	0	10		
4.3	A	Use public forums and outreach, including the Douglas Community website, to advertise and educate the community about art, music and cultural activities.	2	0	2		

4.3	B	Support partnerships between artists, artistic programs, and cultural organizations.	5	1	6		
5.1	A	Support preservation and re-use of existing housing to improve and expand the housing supply.	5	1	6		
5.1	B	Incentivize redevelopment and renovation of aging properties through tax abatement and revolving loans.	7	1	8		
5.1	C	Expand existing or create a new locally funded program for rehabilitation and restoration of housing units within historic buildings.	3	1	4		
5.2	A	Implement an EV charging permit program and provide EV charging facilities at CBJ facilities, Heritage Park, and the top of Cordova Street. Encourage or require EV charging facilities in commercial and multi-family developments.	3	0	3		
5.2	B	Promote the Douglas Public Library as an information and technology hub of Douglas.	6	0	6	The library is not set up for this at all. Use the Jumbo Gym to create an innovation	
5.2	C	Work with business owners on practical recycling and packaging practices.	5	0	5		
5.2	D	Develop incentives and programs to encourage energy efficiency and conservation in both new construction and	3	0	3		
5.3	A	Re-designate the Land Use category of approximately 17 acres of CBJ-owned parcels abutting the 6th Street right of way from Ultra-low Density Residential to Conservation Area or Natural Area Park.	15	3	18	As mudslides, etc., become more of an issue, I worry about developing above housing already here. Concerns about drainage &	Yes - Landslides occur more on logged/disturbed terrain - make this happen for safety!
5.4	A	Encourage solutions to minimize/address water runoff in major rain events.	13	0	13		

5.4	B	Study, plan and implement measures to mitigate the impact of landslides, mudslides, and avalanches in Douglas.	20	0	20	Will we have to purchase insurance & will not be able to afford living in Douglas?	
5.4	C	Research, promote and incentivize the use of climate change mitigation ideas such as light colored roofs that reflect heat back out to space.	2	1	3		
5.4	D	Encourage and incentivize energy efficient construction such as LEED certified buildings.	2	0	2		
5.4	E	Encourage recycling and composting by facilitating drop-off points in Douglas.	11	0	11		
5.4	F	Explore and encourage the feasibility of wind, tidal, solar and other non-polluting technologies in Douglas.	5	1	6	Have public free charging stations with 2hr limit.	



Let us know what you think!

NAME:

Adrian Barrett

ADDRESS:

3700 N. Douglas Hl

I think that Home owners and Residents
should be Respected.

Fix The Douglas Bridge
Don't plan to fix the after math
Prevent catastrophic failure



Let us know what you think!

NAME:

ADDRESS:

The Douglas Bridge Was Built
1980 with a 70 Year life span

We are coming up on 50 Years
now This plan is for 20 Years
What is the plan to replace
the Bridge at end of Life?

Doug Eckland
215 5th St.



Let us know what you think!

NAME:

Lerr. Roe

ADDRESS:

820 Front St Dgls

Just for a quick starter. Noticing buildings going up in Douglas and West Juneau without ANY SPACE for anything green + growing. They are solid concrete driveways, black crushed rock etc. Not a tree, bush or anything growing anywhere.

Juneau in general is shaving away trees and soil and laying down TOO MUCH asphalt (old KMart parking lot is an eyesore). Think we need to consider how much open land is available due to heavy rains. In the lower 48 our family cemetery plots are underwater every spring due to encroaching housing area with lots of big asphalt driveways.



Let us know what you think!

NAME:

Jones

ADDRESS:

E Street.

I would like to preserve the desirability of Douglas by maintaining its green spaces as well as safe spaces to live without threat of landslides. At this point, I suggest maintaining what exists. The roads, although paving efforts have occurred, are still in disrepair and road gutter systems are inadequate with massive icing continuing to occur even with past improvements. Snow removal ~~is~~ has deteriorated over the years - I can't tell you the number of times in past years I haven't received snow removal service. Therefore, adding more residences^{6th St.} would add more difficulties with roads/traffic, snow removal, water runoff, and down hill difficulties. In terms of additional tourism I again would want to preserve the residential feel of Douglas and maintain a neighborhood with walking in the neighborhood, seeing children playing, and neighbors chatting. My kids grew up in Douglas and enjoyed a nice, safe, outdoor neighborhood that I hope to see continue.

With regard to affordable housing, I have yet to see true affordable housing in Juneau, a town that is not increasing in population. Again, let's maintain what we have and perhaps work on true affordable housing.

Thank you for your time and efforts.



Let us know what you think!

NAME:

Jones

ADDRESS:

E St.

I think it's important to maintain the integrity of Juneau & Douglas by keeping ~~development~~ tourists out of the area. Focus on developing affordable (actually affordable) housing for people in Juneau.

Also, with the increase of landslides in Juneau & across southeast we should do all we can to help reduce ~~to~~ disturbing landslide terrain. Developing 6th street would add stress to landslide terrain & put homes & families at risk.

Public input like this is so important & helps strengthen community. please actually listen to local voices & don't be swayed by the tourist dollar. Also, including groups that are under-represented in the conversation is extremely important, we all live here!

*As always, the Douglas Library provides an incredible service to →

Folks in Douglas & should continue to receive funding & love & care. Libraries are so important to communities & having one in walking distance/ on the bus line in Douglas is so important.

- Contact ^{+ Ruth Gentry} Bruce Rose ^[REDACTED]
to ask about Bus access.
You can say Lisa ^{Egan Lagerquist} suggested you call.
They are avid bus users + renters.
- Ask school to recommend a family to talk to
that might represent lower income young
families needs.
- Any thing to keep encouraging/supporting ~~unmet~~
Douglas diversity



Let us know what you think!

NAME: Mindy Merritt ADDRESS: PO Box 240228 Douglas
(old school Douglas)

1. leave Boat Harbor Trailer Parking as Trailer parking.
2. limit height of buildings in downtown Douglas.
3. NO 6th Street!!! People (Young couple, too) live in Douglas because it is as it is now.



Let us know what you think!

NAME: Maggie Swanson

ADDRESS: 2211 Raven Rd, Unit D
Douglas, AK 99824

A committee member mentioned that boat trailer
parking should move to the Treadwell area- NOT OK!!

Leave parking for boat trailers as is.

Leave Raven Road alone. Thank you.



Let us know what you think!

NAME: Taylor

ADDRESS: E St

I think it is essential to focus on building up community spaces, like a food co-op or community garden. Our Douglas Library is such a great space which offers everyone access to community events, the internet, and information. It is so important to fund + protect our library.

In the future, I would like to see Douglas continue to promote + protect community. I do not want to see more tourism in Douglas. We all suffer enough from that here as it is. Restrict tourism on Douglas!

Subject: Opportunity for Housing & Community Enhancement at 3370 Douglas Hwy
(Douglas Breeze In) - Alignment with Downtown Douglas / West Juneau Area Plan

Dear Steering Committee,

We hope this email finds you well.

We are writing to you as the landowners of the property located at 3370 Douglas Hwy, commonly known as Douglas Breeze In. As you may be aware, our family sold Breeze In 2024 to Myers Group LLC, who operate Foodland, Super Bear, and Dehart's.

Currently, Myers Group has an application pending with the Alaska Alcohol and Marijuana Control Office (AMCO) for the transfer of the liquor license from Douglas Breeze In to Foodland. We anticipate this transfer will be approved in late summer of this year, at which point Douglas Breeze In will cease operations.

With the end of the Douglas Breeze In era approaching, we see a significant opportunity to collaborate with the City of Juneau on the best future use for this strategically located property.

The site is currently zoned D5 with a commercial land use overlay. Given its location, we believe the property presents a unique potential to significantly enhance housing options within Juneau, aligning directly with the goals outlined in the Draft 2025-04-28 Downtown Douglas / West Juneau Area Plan. (Interestingly, the stunning panoramic view of the Gastineau Channel, Mt. Juneau, the Tahku Whale Sculpture, and Mt. Roberts featured on page 4 of the Area Plan is taken from our property!)

We are eager to begin a dialogue with the City about the possibilities for rezoning or alternative land use that would maximize the housing potential of 3370 Douglas Hwy and contribute to the objectives of the Draft Area Plan.

We have identified several goals within the Draft Area Plan where the future of 3370 Douglas Hwy could make a meaningful contribution:

- **Goal 1.3 – Ensure that Downtown Douglas / West Juneau residents have access to year-round public transit that is safe, convenient, and reliable:** Our property is directly situated on the Capital Transit route, and we previously partnered with the City to establish a covered bus stop on-site.
- **Goal 1.4 – Foster community connections to the waterfront that are accessible to all residents and visitors of Downtown Douglas / West Juneau:** We are open to exploring how this property could incorporate public access points to the waterfront

and enhance the recognition of Alaska Native history in the area. This could potentially include connecting the Totem Pole Trail and the Juneau Seawalk across the bridge to a public park on our land (in connection with Goal 2.2).

- **Goal 2.6 - Diversify housing options to support a broad range of current and future Douglas residents:** In light of the pressing need for diverse housing options, we respectfully request the Steering Committee consider working with us to explore the potential for rezoning this property to a higher density residential designation.

Issue/Opportunity:

We recognize the existing limitations within Title 49, which currently underutilizes the development potential of residential zones like D-5 within the urban service boundary. The current restriction to five dwelling units per acre, primarily allowing single-family and duplex housing in areas already served by essential public infrastructure, represents an inefficient model for addressing Juneau's housing shortage. This constraint can contribute to sprawl and diminish the return on existing public infrastructure investments. By limiting density in these established areas, Title 49 inadvertently encourages development further afield, increasing car dependency, potentially impacting the environment, and hindering overall housing supply and affordability.

Proposed Improvement:

We strongly encourage the City and Borough of Juneau to consider upzoning areas within the urban service boundary, including D-5 districts and similar, to enable higher residential density by right. This could involve transitioning D-5 to a new zoning designation permitting 10-20+ dwelling units per acre or implementing flexible overlays that accommodate multifamily housing, small apartment buildings, and townhomes. To further encourage infill development, we suggest considering reductions in minimum lot sizes, the adoption of form-based zoning principles, and the elimination of unnecessary parking mandates. Establishing clear and streamlined approval processes for higher-density developments in these areas would also be beneficial.

Justification & Precedents: Numerous U.S. cities have successfully increased housing supply and affordability by reforming zoning to allow higher densities in residential neighborhoods, particularly near transit and public services. Examples include:

- **Minneapolis, MN:** Eliminated single-family-only zoning citywide, leading to modest but steady increases in multi-unit housing within established neighborhoods.

- **Portland, OR:** Adopted the Residential Infill Project, allowing up to four homes per lot (and six if affordable) in formerly single-family zones, with strong design standards.
- **Seattle, WA:** Encouraged urban village upzoning and accessory dwelling units (ADUs), resulting in more diverse housing options and higher density in key growth areas.
- **Boise, ID:** Introduced form-based code overlays to support gentle density in core neighborhoods, enabling a mix of townhomes and small apartments.

These reforms have helped meet growing demand, reduce housing costs, and make efficient use of public infrastructure—goals that align well with Juneau’s sustainability and housing affordability objectives.

Conclusion:

We believe that a forward-thinking approach to land use, as reflected in Title 49, should recognize the significant potential of D-5 zones and similar areas within the urban service boundary for responsible densification. Upzoning these locations offers a crucial opportunity to alleviate pressure on undeveloped land, address housing scarcity, and foster the development of walkable, transit-accessible communities. This represents a critical step towards aligning zoning policy with the City’s long-term housing and climate goals, and we are eager to partner with the Steering Committee to explore this potential at 3370 Douglas Hwy.

Thank you for your time and consideration. We look forward to the opportunity to discuss this further with you.

Sincerely,

Jenny Lofton

Property Manager

Alcor Lands, LLC

907-957-0873

alcorlands@gmail.com

Conceptual Images:





TERRITORIAL SPORTSMEN

Representing The Sporting Lifestyle Of Southeast Alaskans

May 16, 2025

Dear Downtown Douglas/West Juneau (DD/WJ) Steering Committee,

Territorial Sportsmen Inc is writing to comment on the Downtown Douglas / West Juneau Area Plan. We have a large number of members who regularly use the South Douglas Harbor and support many of the points in the draft Area Plan, including the following sections:

Goal 1.1 – B: Maintain and improve the Douglas Harbor for access to commercial fishing and recreational activities

Goal 2.4: Enhance the Douglas Harbor and surrounding parkland as a community anchor for recreational and economic activity

However, we would like the plan to specifically allow for the expansion of Douglas Harbor. We realize there is no funding at this time, but were such funding to become available, we would like the Area Plan to reflect our membership's desire for an expanded Douglas Harbor.

Sincerely,

Ryan Beason, President
Territorial Sportsmen, Inc.
ryan@erakcpa.com
907-723-7686

ONLINE SURVEY			
In general, what did you think of the draft plan?	Do you have feedback on a specific draft goal or action?	Does this plan address issues important to you as someone who lives, works, or plays in the Downtown Douglas / West Juneau area? If no, what did you feel was excluded?	Were there terms or phrases used in the plan that were confusing or unclear? If so, what were they?
Good: short and easy to read. Bad: no consistency in how many goals and actions in each chapter. Some feel last minute, while others are redundant. Many of the actions seem outside city purview, like 5.2 C - how would the city have any idea about "practical packaging practices"?	Goal 1.2 E is very needed - not safe area for elementary school kids. Goal 5.3 seems unnecessary - the whole place is surrounded by "natural, undeveloped areas" so why take away residential property?	Where is the housing goal? Goal 1.6 talks about the old school turning into a "multi-purpose hub" but doesn't mention the housing part, like artist apartments. Language in Prosperous Community talks about Douglas having a "self-sufficient" economy, but it takes customers to support businesses, and there's no housing goals to bring new people in.	What does "encourage" really mean? Too vague to have any impact.
Generally good	(no comment)	Yes it covers all areas. In my opinion maybe too many areas addressed. I'd rather see the city do several things well than many things poorly.	Confusing and unclear. Yes talking about DIA transfer of mayflower island. Not clear about options. Also talking about capital school as the parks and recreation maintenance shop. I think it's two different areas. I think the wording determined how people responded with red and green dots.

(no comment)	I've been a resident of downtown Douglas (corner of 3rd and E) since 1991. Every day I experience auto traffic coming from 4th and 5th to make a turn onto 3rd, the town's main artery. Although opening up the 6th street corridor for residential development would increase traffic, I strongly urge you to maintain the status quo zoning. The City should not further reduce its inventory of potentially developable land. A green space corridor above 5th is unnecessary.	(no comment)	(no comment)
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It's good, but should have been two different plans. Douglas and West Juneau are areas with very different characters.	More crosswalks in downtown Douglas. Crossing light should be added at Cordova, Crow Hill, and at Sayeik Gastineau School. Incentive owners of vacant lots and buildings to develop, whether housing or small businesses. Develop a field house like facility in the Sandy Beach Savikko Park area. Paving streets and adding sidewalks where there is room would be great. If the CBJ isn't going to utilize Mayflower Island it should be sold so the building doesn't deteriorate with deferred maintenance. Look to dispose of undeveloped ROWs also, if there is no plan to develop them.	It may address too much. Douglas is a wonderful bedroom community. I think it should stay that way, for the use of locals. I don't think tourism on any scale should be promoted or encouraged. Independent travelers will find their own way to hidden gems. We don't need to invite mass tourism.	Some place names were confusing, in that, what is used colloquially may be different than official names.
I appreciate the plan elements (connected community, healthy community . . .). They seem like core values for the area. The draft plan makes no mention of the three worshipping communities there. Two of them provide food pantries for Douglas as well as community centers (Sukkat Shalom & Douglas Methodist). I'm curious why the library and church don't make it on the map.	I'm unsure what Mayflower Island is and will need to look it up.	Yes	Goal 5.4 Research, promote and incentivize the use of climate change mitigation ideas such as light colored roofs that reflect heat back out to space. (Unclear what that means and how it would make a difference here)

I thought it was just right - not too long but a lot of interesting information in it.	Not on a specific goal but I would like to see a community garden at Savikko #4 - the one across from parks and rec building. I would also like to see a harbor office at the boat harbor in Douglas even if it was only staffed part-time from April - September.	I thought it was a balanced approach to the Douglas neighborhood although I would have liked to see 6th street above 5th street left as available for development.	The terms and phrases used were just fine.
Good progress! Waiting to see details in finalize draft	At the Open House (5/7) ... Regarding the key goal of PRESERVING the area "above 5th Street" as "GREEN SPACE": .. WHY .. was there the erroneous, irrelevant text written (printed) onto the BIG planning inspection sheet, .. then crossed out, and then "replaced" by a hand-scrawled, folded paper note. .. It had all the appearance of a hack-job, presented as a patched afterthought, thus casting the exactly wrong impression of the importance of that goal.	No, the plan is way too "current focused," and virtually nothing about a plan for either the PRIME CBJ-owned real estate between the 3rd street commercial corridor, and the harbor. ... Looking out years ahead, What is the plan for creating a usable commercial and residential property transmittal and development there? .. That is world-class property and vistas. There is NOTHING there for virtually all the year. Just dust blowing around on gravel parking lots. Empty. Pointless. Having zero plan for that area ids a frank failure of planning.	Yes, there is a problem with nomenclature. There should be a robust listing of definitions and acronyms, also with and Index. That is, too much insider "planner-speak."

Additional Materials

Regular Planning Commission Meeting

Assembly Chambers
7:00pm
Meeting Date: July 22, 2025

1. ARF2025 0001:

- a. Public comment: Carole Bookless, received 7/12/2025.

2. CSP2025 0001:

- a. Public comment: Carole Bookless, received 7/12/2025.

3. FZE2025 0001:

- a. Public comment: Sam Hatch, received 7/15/2025.
- b. Public comment: Lori Stedman, received 7/15/2025.
- c. Presentation: Nate Rumsey CBJ Engineering & Public Works, received 7/18/2025.
- d. Compiled Application, received 7/18/2025.
- e. MEMO: HESCO Barrier, Phase 1 Project - Response to July 15, 2025, Planning Commission Committee of the Whole Questions, received 7/18/2025.

4. AME2019 0015:

- a. Agency Comment: Dan Bleidorn, Lands and Resources Manager, received 7/17/2025.
- b. Agency Comment: Lauren Verrelli, Deputy Director CBJ Parks & Recreation, received 7/17/2025.

From: [Carole Bookless](#)
To: [PC Comments](#)
Subject: Brow Tine Subdivision
Date: Saturday, July 12, 2025 12:51:22 PM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Sounds like a good idea for needed housing.
Carole Bookless
Douglas

From: [Carole Bookless](#)
To: [PC Comments](#)
Subject: <https://juneau.org/community-development/short-term-projects#74972622fe6b228fb>
Date: Saturday, July 12, 2025 12:30:23 PM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

This is not a priority concern for me. I used to drive this every day twice a day and really didn't think about it at all. Money could be spent elsewhere.

My son says although he hates this intersection, he does not feel it is worth spending tax dollars on. Stop spending money or use it on something that is a real problem.

From: [Carole Bookless](#)
To: [PC Comments](#)
Subject: Re: <https://juneau.org/community-development/short-term-projects#74972622fe6b228fb>
Date: Saturday, July 12, 2025 12:52:53 PM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Adding my name. Carole Bookless, Douglas

> On Jul 12, 2025, at 12:29 PM, Carole Bookless <carobo@rocketmail.com> wrote:

>

> This is not a priority concern for me. I used to drive this every day twice a day and really didn't think about it at all. Money could be spent elsewhere.

> My son says although he hates this intersection, he does not feel it is worth spending tax dollars on. Stop spending money or use it on something that is a real problem.

From: [Carole Bookless](#)
To: [PC Comments](#)
Subject: CSP 2500-0001 Vanderbilt Egan intersection
Date: Saturday, July 12, 2025 12:46:10 PM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

This is not a priority concern for me. We should be slowing down traffic on Egan, not speeding it up. Depending on what happens with the Second Douglas Crossing, this could be wasted dollars in a few years. The new subdivision near Twin Lakes will put more pressure on this intersection soon. It is confusing enough already. This is totally premature, not needed and a waste of tax dollars. Put the funds toward something that is really needed or lower taxes.

Stop just spending money or use it on something that is a real problem.

I can't believe this is being proposed when folks are still killed and injured near Fred's.

From: [Sam Hatch](#)
To: [PC Comments](#)
Subject: Comment on FZE2025-0001 : HESCO Floodplain Exemption
Date: Tuesday, July 15, 2025 7:27:19 AM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Planning Commission,

CBJ's HESCO project should not be given exemptions from the floodplain requirements. To do so would endorse CBJ's civil engineering's method of build first verify safety second. The dates in the reports show construction was already underway and in many cases already done before the effects were known or understood.

This exemption application is after the fact, the decision has already been made for the board - the barriers are installed. The question is, whether or not Juneau has a working floodplain management ordinance, if you grant the exemptions requested, we do not.

CBJ intentionally bypassed planning safeguards intended to prevent this type of thoughtless, quick and dirty, river redesign. I say this because the barriers actually INCREASE flood risk at my address and to nearby streets. In the "no rise" report, my section of the river is projected to be higher, I live right by the red parts of the report. Yes, I'm behind some dirt-bags, but the risk is worse than before! Both from increased flood heights and the potential of retained water behind the barriers. Hold CBJ Engineering to the letter of the law. Additional work is needed to ensure an actual NO-RISE. If you approve the exemption, CBJ won't work to correct this problem. It will continue the project as is without a wholistic plan, increasing it's potential impact and risks.

One way to achieve an actual No-Rise would be to expand the floodway along Brotherhood trail. This is a recurring theme in public testimony, which has so far been ignored by CBJ. This would be addressed with a comprehensive floodplain management plan, one of the requirements that they are asking to not follow.

Please protect the valley by holding CBJ to the rules that are in place. Exemptions in the code were intended for small projects with minimal impacts, not multi-mile armoring and floodwall /levee building. Make the project achieve a real No-Rise and have a long-term plan that doesn't make things worse.

Thank you for your time, and for you service to Juneau,

Sam Hatch
3477 Meander Way
(907) 321-4200

From: [lori Stedman](#)
To: [PC Comments](#)
Subject: CBJ HESCO project
Date: Tuesday, July 15, 2025 9:28:38 AM

EXTERNAL E-MAIL: BE CAUTIOUS WHEN OPENING FILES OR FOLLOWING LINKS

Planning Commission,

CBJ's HESCO project should not be given exemptions from the floodplain requirements. To do so would endorse CBJ's civil engineering's method of build first verify safety second. The dates in the reports show construction was already underway and in many cases already done before the effects were known or understood.

This exemption application is after the fact, the decision has already been made for the board - the barriers are installed. The question is, whether or not Juneau has a working floodplain management ordinance, if you grant the exemptions requested, we do not.

CBJ intentionally bypassed planning safeguards intended to prevent this type of thoughtless, quick and dirty, river redesign. I say this because the barriers actually INCREASE flood risk at my address and to nearby streets. In the "no rise" report, my section of the river on Marion Drive is projected to be higher, I live right by the red parts of the report. Yes, the HSCO barriers in my yard, and the risk is worse than before! Both from increased flood heights and the potential of retained water behind the barriers. Hold CBJ Engineering to the letter of the law. Additional work is needed to ensure an actual NO-RISE. If you approve the exemption, CBJ won't work to correct this problem. It will continue the project as is without a wholistic plan, increasing its potential impact and risks.

One way to achieve an actual No-Rise would be to expand the floodway along Brotherhood trail. This is a recurring theme in public testimony, which has so far been ignored by CBJ. This would be addressed with a comprehensive floodplain management plan, one of the requirements that they are asking to not follow.

Please protect the valley by holding CBJ to the rules that are in place. Exemptions in the code were intended for small projects with minimal impacts, not multi-mile armoring and floodwall /levee building. Make the project achieve a real No-Rise and have a long-term plan that doesn't make things worse.

Thank you for your time, and for you service to Juneau,

Lori Stedman
4253 Marion Dr
9077236266

[Sent from Yahoo Mail for iPhone](#)

FLOOD ZONE EXCEPTION APPLICATION

HESCO Barrier Phase 1



July 15, 2025 | CBJ Planning Commission

Nate Rumsey, PE

Deputy Director, Engineering & Public Works | CBJ

FZE25-001



Ordinance 2024-40 Exhibit A - 16ft flood inundation

FLOOD ZONE EXCEPTION APPLICATION

HESCO Barrier Phase 1



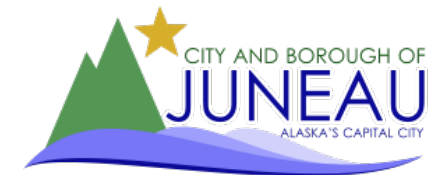
Ordinance 2024-40 Exhibit A - 16ft flood inundation

- Project Background / Purpose
 - Reduce Community Flood Risk
- Project Development and Permitting
- CBJ Request for Code Exception

AUGUST 2024 MENDENHALL FLOOD EVENT



Mendenhall Valley Flooding – approx. 1 hour after peak of Glacial Lake Outburst Flooding (GLOF)

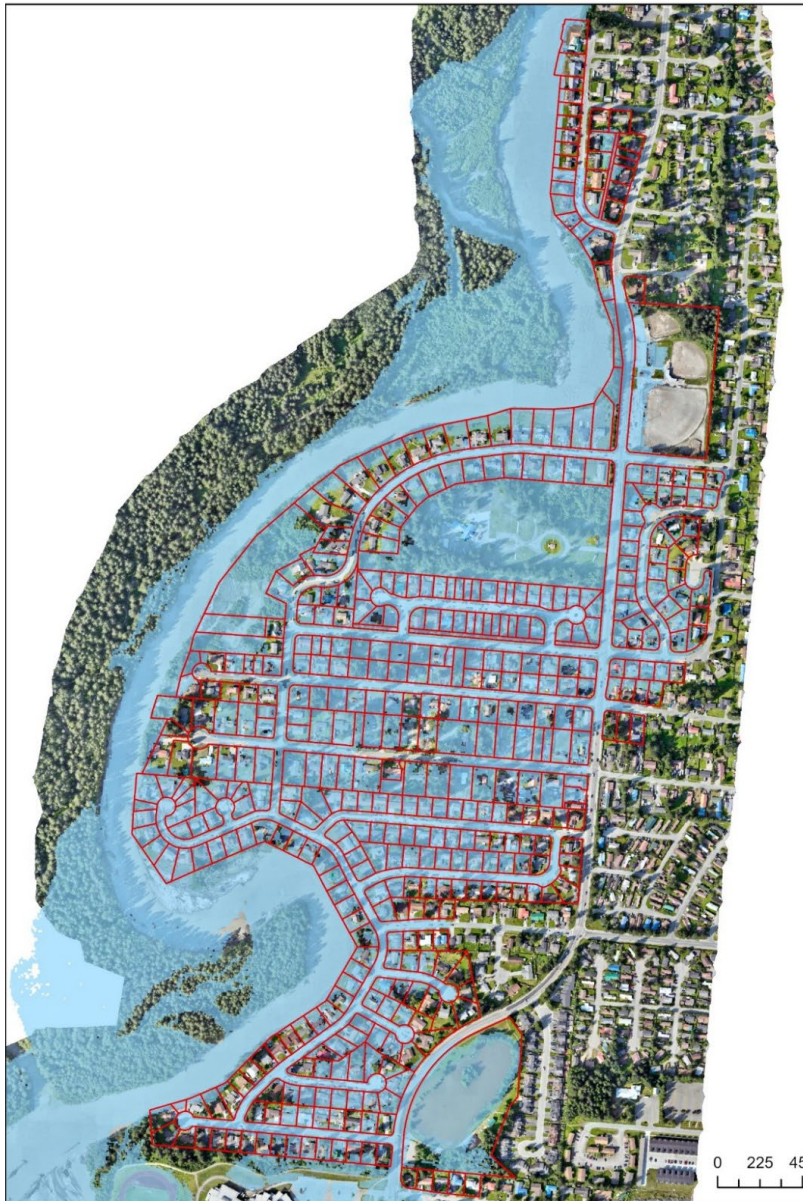


Project Background

- On February 3, 2025, the CBJ Assembly authorized Ordinance 2024-40(am) which created Local Improvement District No. 201 (HESCO Barrier Project Phase 1) and directed the execution of the project. The LID was voted on by affected property owners and was approved by a 349:117 tally.
- Assembly / Public process:
 - October 21, 2024: Assembly meeting (discussion)
 - November 12, 2024: U.S. Army Corps of Engineers public meeting*
 - November 14, 2024: U.S. Army Corps of Engineers Open House*
 - November 18, 2024: Ordinance introduced to Assembly
 - December 16, 2024: Assembly meeting (initial public testimony)
 - January 3, 2025: CBJ public meeting

* With CBJ Leadership, Engineering and Public Works staff support and participation





Ordinance 2024-40 Exhibit A - 16ft flood inundation

Project Purpose

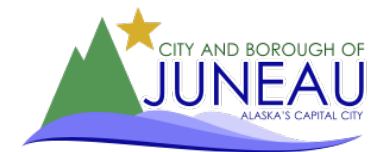
To reduce community flood risk associated with possible future Suicide Basin glacial lake outburst flood (GLOF) events.

- Project conceived, developed, and directed to provide near-term, non-permanent flood protection for properties along the Mendenhall River impacted by the 2024 GLOF.
- Project sequenced, with Phase 1 selected to provide protection to the greatest number of properties within a limited construction season.



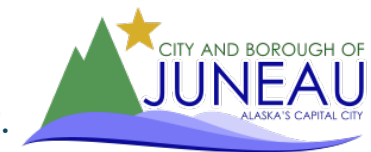
Project Development

- Floodfighting Expert Consultation
 - Post-2024 GLOF Multi-Agency Technical Work Session.
- USACE Advance Measures
 - USACE Technical Support – Project development site visits.
 - Floodfighting material and equipment contributions.
 - HESCO barriers, Supersacks, sandbags.
- Hydrologic and Hydraulic Modeling
 - HEC-RAS 2D surface water model development.
 - Updated inundation mapping.
 - HESCO Base Flood Elevation analysis.
- CBJ Licensed Engineers
 - Completed armoring design and No-Rise
 - Developed alignment and configuration of HESCOs.
 - Managed H&H analysis and inundation mapping project.
 - Provided construction oversight and field engineering.
- Manufacturer's Recommendations
 - Basis for HESCO assembly and foundation work.
- USACE/Manufacturer's Technical Advisors
 - Onsite for duration of HESCO installation

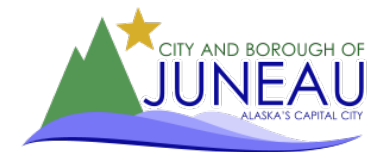
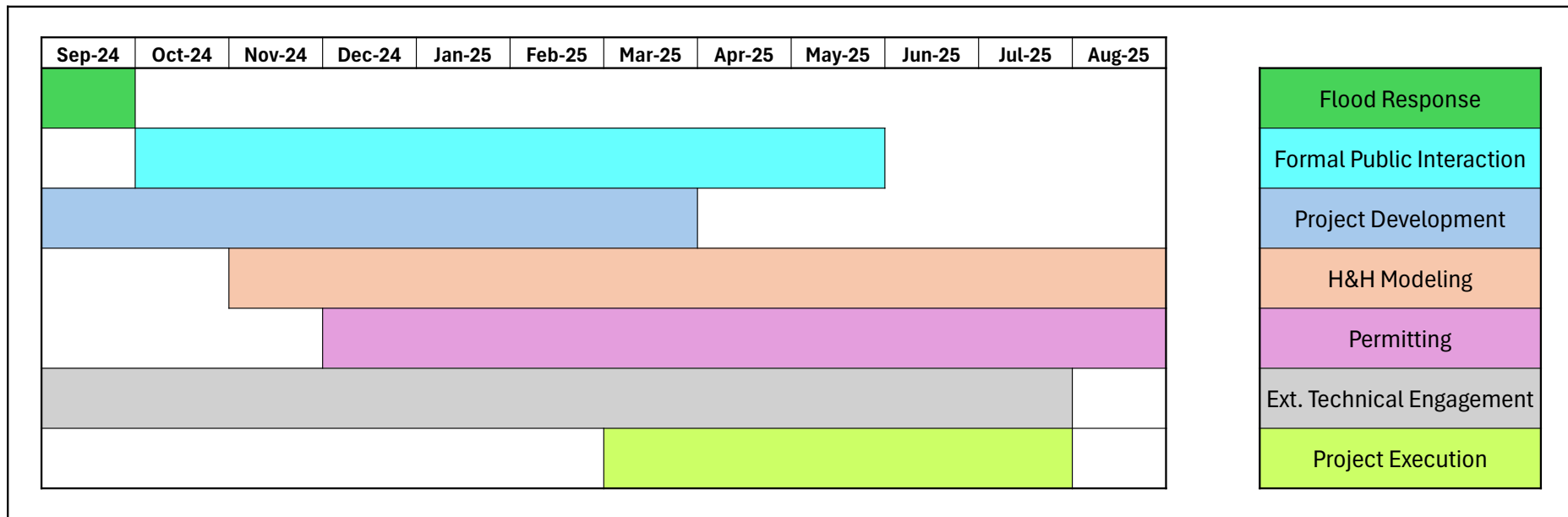


Project Permitting

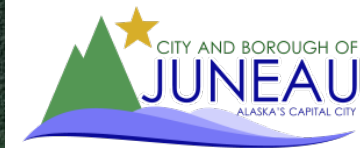
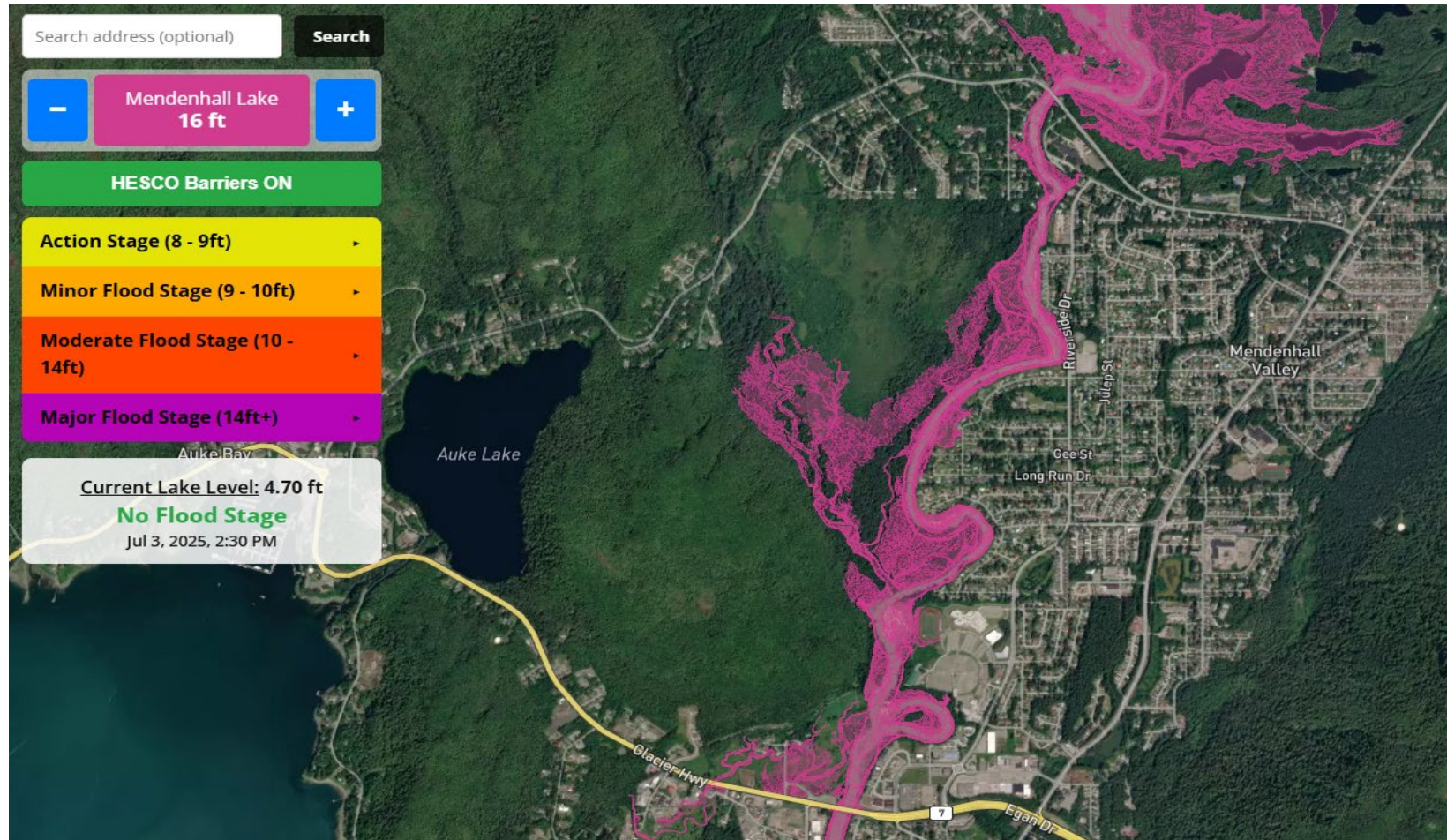
- Pre-Application Conference (12/30/24)
 - CBJ Community Development
 - U.S. Army Corps of Engineers
 - Federal Emergency Management Agency
 - Alaska Department of Natural Resources
 - Alaska Department of Fish and Game
- Permit Applications Submitted:
 - CBJ Floodplain Development Permit
 - CBJ Development Permit
 - USACE Nationwide Permit
 - ADNR Development Authorization
 - ADF&G Fish Habitat Permits
- Permits Received
 - USACE NWP: POA-2025-00089
 - ADNR Development Auth: ADL 109422
 - ADF&G Fish Habitat Permits:
 - FH25-I-0020 thru FH25-I-0029
- Permits Outstanding
 - CBJ Flood Zone Exception
 - CBJ Development Permit
- Potential Additional Regulatory Requirements
 - FEMA CLOMR/LOMR
 - Bathymetry and Survey work ongoing.



Project Timeline



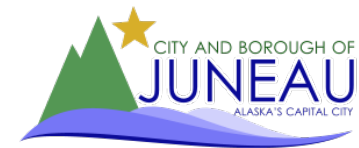
Project Visuals



Project Visuals



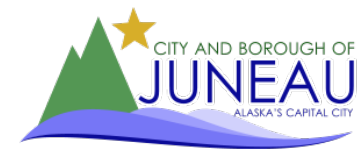
North Marion Drive



Project Visuals



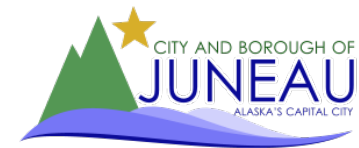
Marion Drive



Project Visuals



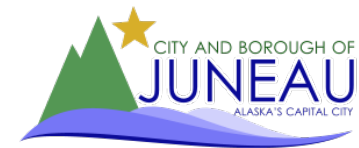
Marion/Riverside



Project Visuals



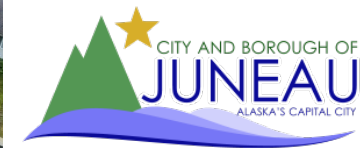
Riverside/Killewich



Project Visuals



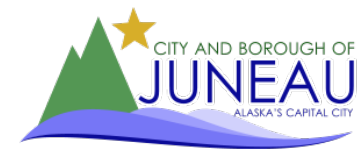
Killewich Dr.



Project Visuals



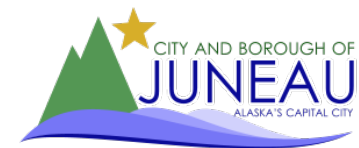
Killewich/Sharon



Project Visuals



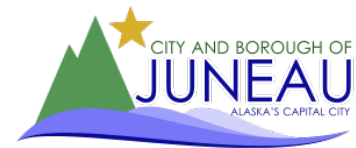
Betty Ct.



Project Visuals



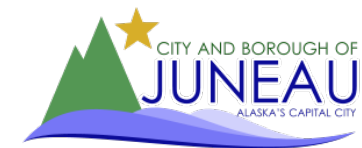
Killewich/Sharon/
Betty Ct/Long Run Dr.



Project Visuals



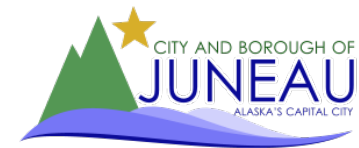
North Meander Way



Project Visuals

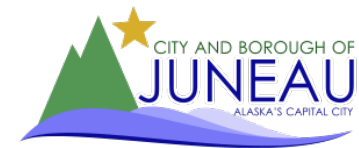


Meander/Rivercourt



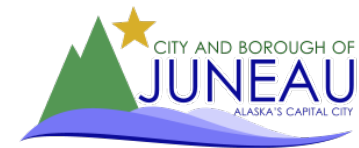
Flood Zone Exception Request

1. [CBJ 49.70.400(e)(3)(E)] – Description of the plan for maintenance of the altered portion of the watercourse so that the flood-carrying capacity is not diminished.
2. [CBJ 49.70.400(f)(4)] – Control filling, grading, dredging, and other development that may increase flood damage.
3. [CBJ 49.70.400(f)(5)] – Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters or that may increase flood hazards in other areas.
4. [CBJ 49.70.400(g)(1)(A)] – Design, modify, and anchor new construction and substantial improvements to prevent flotation, collapse, or lateral movement of the structure(s)
5. [CBJ 49.70.400(g)(5)] – Floodplain development permit requirements.
6. [CBJ 49.70.400(i)(2)] – Encroachments, including fill, new construction, and other development, except subdivisions, within a floodway are prohibited unless an engineer licensed in the State of Alaska submits a hydrologic and hydraulic analyses to the director indicating that the encroachment would not result in any increase in flood levels during the occurrence of the base flood discharge. The hydrologic and hydraulic analyses must be performed in accordance with standard engineering practice acceptable by the Federal Emergency Management Agency.



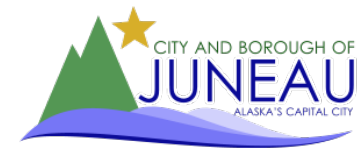
Exception Justification

- Urgent need for project precluded the development of typical design documentation.
 - All work was developed and supervised by licensed CBJ engineers and seasoned CBJ project managers with continuous technical support from USACE floodfighting experts and professional H&H consultants:
 - Minor filling and grading to provide suitable foundations for HESCO barrier.
 - HESCO foundation and fill material considerations.
- H&H modeling was custom built using latest HEC-RAS 2D software to support HESCO barrier installation and to develop new inundation maps, not derived from FEMA Existing model.
 - Model was created by highly qualified professionals in consultation with experts from USACE, NWS, and UAS using the most up-to-date data to inform the project and to create inundation maps.
- Project was developed and executed with oversight by licensed CBJ engineers with support from highly qualified consultants, USACE floodfighting experts, and manufacturer's technical advisors.



Exception Justification

- Purpose of project is to reduce community flood risk from GLOF events.
 - It is anticipated that this project will protect nearly 500 properties from flooding during a GLOF similar in magnitude to the 2024 event.
 - H&H modeling demonstrates no additional community risk during a 100-yr flood event, or from a GLOF similar in magnitude to the 2024 event.
 - Project voted on directly by affected property owners, passing 349:117.
 - Project was subject to extensive public processes for the past 9 months.



Questions?





DEVELOPMENT PERMIT APPLICATION

NOTE: Development Permit Application forms must accompany all other Community Development Department land use applications. This form and all documents associated with it are public record once submitted.

To be completed by Applicant	PROPERTY LOCATION		
	Physical Address 9399 Rivercourt Way to 4395 Riverside Drive		
	Legal Description(s) (Subdivision, Survey, Block, Tract, Lot) See Parcel Listing attachment		
	Parcel Number(s) See Parcel Listing attachment		
	☐ This property is located in the downtown historic district ☐ This property is located in a mapped hazard area, if so, which _____		
	LANDOWNER/ LESSEE		
	Property Owner	Contact Person	
	Varies (see Parcel Listing attachment)		Nathan Rumsey
	Mailing Address	Phone Number(s)	
	155 Heritage Way, Juneau, AK 99801	907-586-0800 x4182	
E-mail Address	nate.rumsey@juneau.gov		
LANDOWNER/ LESSEE CONSENT			
Required for Planning Permits, not needed on Building/ Engineering Permits.			
Consent is required of all landowners/ lessees. If submitted with the application, alternative written approval may be sufficient. Written approval must include the property location, landowner/ lessee's printed name, signature, and the applicant's name.			
I am (we are) the owner(s) or lessee(s) of the property subject to this application and I (we) consent as follows:			
A. This application for a land use or activity review for development on my (our) property is made with my complete understanding and permission.			
B. I (we) grant permission for the City and Borough of Juneau officials/employees to inspect my property as needed for purposes of this application.			
Local Improvement District			
Landowner/Lessee (Printed Name)		Title (e.g.: Landowner, Lessee)	
_____		_____	
X	Landowner/Lessee (Signature)	Date	
	_____	_____	
	Landowner/Lessee (Printed Name)	Title (e.g.: Landowner, Lessee)	
	_____	_____	
X	Landowner/Lessee (Signature)	Date	
	_____	_____	
NOTICE: The City and Borough of Juneau staff may need access to the subject property during regular business hours. We will make every effort to contact you in advance, but may need to access the property in your absence and in accordance with the consent above. Also, members of the Planning Commission may visit the property before a scheduled public hearing date.			
APPLICANT			
If same as LANDOWNER, write "SAME"			
Applicant (Printed Name)	Contact Person		
City and Borough of Juneau	Nathan Rumsey		
Mailing Address	Phone Number(s)		
155 Heritage Way, Juneau, AK 99801	907-586-0800 x4182		
E-mail Address	nate.rumsey@juneau.gov		
X	Applicant's Signature <i>Nate Rumsey</i>	Date of Application 6/26/2025	

DEPARTMENT USE ONLY BELOW THIS LINE

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Intake Initials FHC	Date Received 25/6/26
Case Number PZE25-001	

Owner	Parcel #	Street Address	Legal Description	Mailing Address Line 1	City	State	Zip
John & Sharon Taber; Judith Taber O'Kelley	5B2101190160	9399 Rivercourt Way	LAKEWOOD I BL A LT 16	9399 Rivercourt Way	Juneau	AK	99801
Scott W Heaton; Traci S Heaton	5B2101200010	9391 Rivercourt Way	LAKEWOOD I BL B LT 1	9391 Rivercourt Way	Juneau	AK	99801
William F Race; Sara M Race	5B2101200100	3339 Meander Way	LAKEWOOD I BL B LT 10	3339 Meander Way	Juneau	AK	99801
Alan & Joann Steinger	5B2101200110	3343 Meander Way	LAKEWOOD I BL B LT 11	3343 Meander Way	Juneau	AK	99801
Lisa Bryant	5B2101200120	3361 Meander Way	LAKEWOOD I BL B LT 12	3361 Meander Way	Juneau	AK	99801
Robert Atadero; Adrienne Atadero	5B2101200130	3377 Meander Way	LAKEWOOD I BL B LT 13	3377 Meander Way	Juneau	AK	99801
Constance Stager	5B2101200150	3401 Meander Way	LAKEWOOD I BL B LT 15	3401 Meander Way	Juneau	AK	99801
Joshua Hamilton; Andrea Hamilton	5B2101200160	3425 Meander Way	LAKEWOOD I BL B LT 16	3425 Meander Way	Juneau	AK	99801
Benjamin Miller	5B2101200030	3311 Meander Way	LAKEWOOD I BL B LT 3	3367 Killewich Dr	Juneau	AK	99801
Dee Pearson; Robert Pearson	5B2101200080	3331 Meander Way;	LAKEWOOD I BL B LT 8	3333 Meander Way	Juneau	AK	99801
Bjorn Karl & Stefanie Wolter	5B2101200090	3335 Meander Way	LAKEWOOD I BL B LT 9	3335 Meander Way	Juneau	AK	99801
Dennis Mathers; Kimberly Mathers	5B2101210010	3429 Meander Way	LAKEWOOD II BL B LT 17A	3429 Meander Way	Juneau	AK	99801
Nicolaas Wilhelmus Bus; Susan Miller Bus	5B2101210020	3433 Meander Way	LAKEWOOD II BL B LT 18A	3433 Meander Way	Juneau	AK	99801
Mark Bunness; Rhonda Bunness	5B2101210030	3437 Meander Way	LAKEWOOD II BL B LT 19	3437 Meander Way	Juneau	AK	99801
Jordan Ashley McNatt; Chase Robert McNatt	5B2101210040	3441 Meander Way	LAKEWOOD III BL B LT 20	3441 Meander Way	Juneau	AK	99801
Norman E Staton; Donna M Staton	5B2101210050	3445 Meander Way	LAKEWOOD III BL B LT 21	3445 Meander Way	Juneau	AK	99801
Howard R Jaeger; Roberta J Jaeger	5B2101210060	3451 Meander Way	LAKEWOOD III BL B LT 22	3451 Meander Way	Juneau	AK	99801
Jessica Wright; Andre Khmelev	5B2101210070	3455 Meander Way	LAKEWOOD III BL B LT 23	3455 Meander Way	Juneau	AK	99801
Jeffrey M Rud; Lori L Rud	5B2101210080	3459 Meander Way	LAKEWOOD III BL B LT 24	3459 Meander Way	Juneau	AK	99801
Kamal Lindorff; Danielle Lindorff	5B2101210100	3467 Meander Way	LAKEWOOD III BL B LT 26	3467 Meander Way	Juneau	AK	99801
Melissa Brown; Locke O Brown	5B2101210110	3471 Meander Way	LAKEWOOD III BL B LT 27	3471 Meander Way	Juneau	AK	99801
Samuel E Hatch	5B2101210120	3475 Meander Way	LAKEWOOD III BL B LT 28	3475 Meander Way	Juneau	AK	99801
Sean Smack; Ashley Smack	5B2101210130	3479 Meander Way	LAKEWOOD III BL B LT 29	3479 Meander Way	Juneau	AK	99801
Jeffrey Garmon; Nicolle Garmon	5B2101210140	3483 Meander Way	LAKEWOOD III BL B LT 30	3483 Meander Way	Juneau	AK	99801
Kevin Tillotson; Gabriella Tillotson	5B2101210180	3499 Meander Way	LAKEWOOD III BL B LT 34	3499 Meander Way	Juneau	AK	99801
Scott J Griffith; Sarah L Griffith	5B2101220010	3503 Meander Way	LAKEWOOD III BL C LT 1	3503 Meander Way	Juneau	AK	99801
Elizabeth Barr Cayce	5B2601000030	9419 Long Run Dr	LENGTHY ACRES BL 3 LT E TR W	9419 Long Run Dr.	Juneau	AK	99801
Bonnie Chaney; Gregory Chaney	5B2601000042	9418 Long Run Dr.	LENGTHY ACRES BL 4 LT A2	715 Sixth Street	Juneau	AK	99801
Jeffry L Lind; Ann M Lind	5B2501460014	4299 Marion Dr	LINDS OASIS LT 2	4299 Marion Dr	Juneau	AK	99801
John Bishop; Anita Bishop	5B2501450010	4229 Marion Dr	QUAYS EDGE LT 1	4229 Marion Dr	Juneau	AK	99801
Joan A Brown	5B2501450100	4265 Marion Dr	QUAYS EDGE LT 10	4265 Marion Dr	Juneau	AK	99801
Jacob Olmstead; Cailey Neary	5B2501450110	4269 Marion Dr	QUAYS EDGE LT 11	4269 Marion Dr	Juneau	AK	99801
George Carpenter; Darlene Carpenter	5B2501450120	4273 Marion Dr	QUAYS EDGE LT 12	4273 Marion Dr	Juneau	AK	99801
Gary Leder; Juli Leder	5B2501450020	4233 Marion Dr	QUAYS EDGE LT 2	4233 Marion Dr	Juneau	AK	99801
David Athearn; Cynthia Athearn	5B2501450030	4237 Marion Dr	QUAYS EDGE LT 3	4237 Marion Dr	Juneau	AK	99801
William J Palmer	5B2501450060	4249 Marion Dr	QUAYS EDGE LT 6	4249 Marion Dr	Juneau	AK	99801
Peter Bangs; Cara Rodgveller	5B2501450080	4257 Marion Dr	QUAYS EDGE LT 8	4257 Marion Dr	Juneau	AK	99801
David & Colleen McKenna	5B2501450090	4261 Marion Dr	QUAYS EDGE LT 9	4261 Marion Dr	Juneau	AK	99801
Darrin Crapo; Lindsay Crapo	5B2601010020	9347 Betty Ct	SMITH PARK IV BL 6 LT 5	9347 Betty Ct	Juneau	AK	99801
William Diebels Jr & Audrey Diebels	5B2601010030	9342 Betty Ct	SMITH PARK IV BL 6 LT 6	9342 Betty Ct	Juneau	AK	99801
Lawrence J Sullivan	5B2501100051	9336 Betty Ct	SMITH PARK IV BL 6 LT 8A	9336 Betty Ct	Juneau	AK	99801
Anselm Staack; Carol Staack	5B2501100060	9330 Betty Ct	SMITH PARK IV BL 6 LT 9	9330 Betty Ct	Juneau	AK	99801
Drew and Michelle Norman	5B2501160040	3819 Killewich Dr	SMITH PARK IV BL 7 LT 4A1	3819 Killewich Dr	Juneau	AK	99801
James L Wright	5B2501160050	3823 Killewich Dr	SMITH PARK IV BL 7 LT 4B1	3823 Killewich Dr	Juneau	AK	99801
Charity Lynn Platt	5B2501160061	3827 Killewich Dr	SMITH PARK IV BL 7 LT 5A1	3827 Killewich Dr	Juneau	AK	99801
Christopher Gianotti; Joan Gianotti	5B2501160071	3831 Killewich Dr	SMITH PARK IV BL 7 LT 6A1	3831 Killewich Dr	Juneau	AK	99801

Laureen Dicarlo; Paul Dicarlo	5B2501430050	3871 Killewich Dr	SMITH PARK VI BL A LT 10	3871 Killewich Dr	Juneau	AK	99801
Brian Nielsen; Kaiti Nielsen	5B2501430040	3875 Killewich Dr	SMITH PARK VI BL A LT 11	3875 Killewich Dr	Juneau	AK	99801
Donna M Schultz	5B2501430030	3879 Killewich Dr	SMITH PARK VI BL A LT 12	3879 Killewich Dr	Juneau	AK	99801
Jane R Huckstorf; David L Cline	5B2501430020	3883 Killewich Dr	SMITH PARK VI BL A LT 13	3883 Killewich Dr	Juneau	AK	99801
Scott Gende; Amy Reifenstein	5B2501430120	3843 Killewich Dr	SMITH PARK VI BL A LT 3	3843 Killewich Dr	Juneau	AK	99801
Michael Tibbles; Kristy Tibbles	5B2501430100	3851 Killewich Dr	SMITH PARK VI BL A LT 5	3851 Killewich Dr	Juneau	AK	99801
Gretchen Pence; William Pence	5B2501430080	3859 Killewich Dr	SMITH PARK VI BL A LT 7	3859 Killewich Dr	Juneau	AK	99801
Eric S Holst; Sandra K Holst	5B2501430070	3863 Killewich Dr	SMITH PARK VI BL A LT 8	3863 Killewich Dr	Juneau	AK	99801
Christie Benz	5B2501430060	3867 Killewich Dr; 3867 Killewich Dr Unit B	SMITH PARK VI BL A LT 9	3867 Killewich Dr	Juneau	AK	99801
Stephen Balt; Heather Bail	5B2501100071	3785 Killewich Dr	SMITH PARK VII LT 1	3807 Killewich Dr	Juneau	AK	99801
Mark Ryder; Amanda Ryder	5B2501100093	3807 Killewich Dr	TIM LT 1	4215 Riverside Dr	Juneau	AK	99801
Rodney A Wilson	5B2501440030	4211 Riverside Dr;	TIM LT 2	4101 Riverside Dr	Juneau	AK	99801
Brian Dallas; Sara Dallas	5B2501440020	4101 Riverside Dr;	VAN VLEITS LANDING LT 1	4293 Marion Dr	Juneau	AK	99801
Gregory & Anita Thomas	5B2501460012	4293 Marion Dr	LAKEWOOD III BL B LT 32	PO Box 20222	Juneau	AK	99802
John & Suzanne Schoenmann	5B2101210160	3491 Meander Way	LAKEWOOD I BL B LT 14	PO Box 35351	Juneau	AK	99803
Morgan Cruz Erisman; Vladimir Cruz	5B2101200140	3379 Meander Way	SMITH PARK IV BL 7 LT 3A1	PO Box 33924	Juneau	AK	99803
Timothy K Smith; Carrie E Smith	5B2501160032	3815 Killewich Dr	SMITH PARK VI BL A LT 2	PO Box 34221	Juneau	AK	99803
Jonathan K Gunstrom; Brooke S Gunstrom	5B2501430130	3839 Killewich Dr	SMITH PARK VI BL A LT 4	PO Box 32497	Juneau	AK	99803
Frank F Mesdag; Mimi D Mesdag	5B2501430110	3847 Killewich Dr;	SMITH PARK VI BL A LT 6	PO Box 34562	Juneau	AK	99803
Richard N Janelle; Kim M Janelle	5B2501430090	3855 Killewich Dr	LENGTHY ACRES BL 4 LT A1A	PO Box 210525	Auke Bay	AK	99821
Stephen M Bower; Patricia J Bower	5B2601000043	9416 Long Run Dr	SMITH PARK IV BL 7 LT 2A	108 Huckleberry Cir	Ketchikan	AK	99901
Killehuck LLC	5B2501160021	3811 Killewich Dr	SMITH PARK IV BL 6 LT 11	3795 Killewich Dr	Juneau	AK	99801-8817
Daniel C Wayne; Kathleen A Wayne	5B2501100080	3795 Killewich Dr	LAKEWOOD I BL B LT 7	3327 Meander Way	Juneau	AK	99801-9602
Garrett & Florentina Schoenberger	5B2101200070	3327 Meander Way	LAKEWOOD III BL B LT 33	3495 Meander Way	Juneau	AK	99801-9626
John H Cooper; Alyson H Cooper	5B2101210170	3495 Meander Way	LAKEWOOD III BL B LT 31	PO Box 020222	Juneau	AK	99802-0222
John G Schoenmann	5B2101210150	3487 Meander Way	LAKEWOOD III BL B LT 25	PO Box 32517	Juneau	AK	99803-2517
Russell and Thyas Shaub Living Trust	5B2101210090	3463 Meander Way	QUAYS EDGE LT 4	PO Box 33614	Juneau	AK	99803-3614
Donald R Nowlin	5B2501450040	4241 Marion Dr	QUAYS EDGE LT 5	PO Box 33614	Juneau	AK	99803-3614
Carefree LLC	5B2501450050	4245 Marion Dr	SMITH PARK VI BL A LT 1	PO Box 34363	Juneau	AK	99803-4363
Mike J Erickson; Bonnie Erickson	5B2501430140	3835 Killewich Dr	QUAYS EDGE LT 7	PO Box 34421	Juneau	AK	99803-4421
James Stedman & Lori Steadman	5B2501450070	4253 Marion Dr	3323 Meander Way	3323 Meander Way	Juneau	AK	99801
Brian J Goettler; Kimberly D Goettler	5B2101200060	3323 Meander Way	3319 Meander Way	3319 Meander Way	Juneau	AK	99801-9602
Harvey E Hergett; Pamela K Hergett	5B2101200050	3319 Meander Way	11422 Olympia Dr	11422 Olympia Dr	Houston	TX	77077
Christine R Shaw; Adam J Shaw	5B2101200040	3315 Meander Way	PO Box 032537	PO Box 32537	Juneau	AK	99803
Loretta Bessie Neal	5B2101200020	9387 Rivercourt Way					



FLOOD ZONE EXCEPTION APPLICATION

See reverse side for more information regarding the permitting process and the materials required for a complete application.

NOTE: Must be accompanied by a DEVELOPMENT PERMIT APPLICATION form.

PROJECT SUMMARY

The project includes installation of HESCO flood barriers and associated bank revetment to protect the Mendenhall Valley from future, likely GLOF flooding. This project covers the east bank of the Mendenhall River from 9399 Rivercourt Way upstream to 4395 Riverside Drive.

Base Flood Elevation Varies

Flood Insurance Rate Map Panel # Multiple

Elevation of Lowest Floor of all Structures Including Basement N/A

Elevation to which the Structure has been Floodproofed N/A

ALL REQUIRED MATERIALS ATTACHED

To be completed by Applicant

☒ Complete application per CBJ 49.70.410

☒ Narrative including:

- ☐ Exceptional hardship if not granted
- ☐ Elevation at lowest floor
- ☐ Elevation structure(s) have been floodproofed
- ☐ Certification that floodproofing meets generally accepted standards
- ☒ Extent to which any watercourse will be altered or relocated
- ☐ Plan for maintenance of altered or relocated watercourse
- ☐ If the base flood elevation will change as a result of the proposed activity, and why
- ☒ Why a flood zone exception is needed
- ☒ How the proposed exception will effect life and property in the event of a flood

☐ How susceptible the proposed facility is to flooding

☒ How the proposed facility/use serves the public

☒ If the facility/use requires a waterfront location

☐ Availability of alternative locations

☐ Compatibility of proposed use with surrounding existing and proposed uses

☐ Relationship of proposed use to the Comprehensive Plan and Flood Management programs

☐ Expected heights, velocity, duration, rate of rise, and sediment transport

☒ Other applicable information as outlined in CBJ 49.70.410(b)

☒ Plans (details on page 2)

-----DEPARTMENT USE ONLY BELOW THIS LINE-----

FLOOD ZONE EXCEPTION FEES		Fees	Check No.	Receipt	Date
Application Fees	\$	<u>400.00</u>			
Admin. of Guarantee	\$	_____			
Adjustment	\$	_____			
Total Fee	\$	_____			

This form and all documents associated with it are public record once submitted.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED

For assistance filling out this form, contact the Permit Center at 586-0770.

Case Number	Date Received
	<u>25/6/26</u>

Flood Zone Exception Application Instructions

Flood zone exceptions are outlined in CBJ 49.70.410

Each application for a Flood Zone Exception is reviewed by the Board of Adjustment at a public hearing. The permit procedure is intended to provide the Board the flexibility necessary to make decisions tailored to individual applications. The Board may stipulate conditions to mitigate external adverse impacts from the proposed use. If it is determined that these impacts cannot be satisfactorily overcome, the permit shall be denied.

Pre-Application Conference: Prior to submitting this application the applicant will meet with City & Borough of Juneau staff to discuss the proposed development, the permit procedure and to determine the application fees. To schedule a pre-application conference, please contact the Permit Center at 586-0770 or via e-mail at Permits@juneau.org.

Application: An application for a Flood Zone Exception will not be accepted by the Community Development Department until it is determined to be complete. The items needed for a complete application are:

1. **Forms:** Completed Flood Zone Exception and Development Permit Application forms.
2. **Fees:** The fee is \$400.00. Any development, work or use done without a permit issued will be subject to double fees. All fees are subject to change.
3. **Project Narrative:** A detailed narrative describing the project according to the criteria under CBJ 49.70.410 Exceptions.
4. **Plans:**
 - A. Site plan showing the dimensions of the parcel, existing and proposed structures, mean lower low water line, topographical contours shown at 2 foot intervals, and elevation drawings illustrating the land and structures.
 - B. Floorplan.
 - C. Profile views.
 - D. If applicable:
 - A. Certification that the floodproofing methods for any nonresidential structure meet generally accepted floodproofing standards.
 - B. Description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.
 - C. Description of the plan for maintenance of the altered or relocated portion of the watercourse so that the flood-carrying capacity is not diminished.

Document Format: All materials submitted as part of an application shall be submitted in either of the following formats:

1. Electronic copies in the following formats: .doc, .txt, .xls, .bmp, .pdf, .jpg, .gif, .xlm, .rtf (other formats may be preapproved by the Community Development Department).
2. Paper copies 11" X 17" or smaller (larger paper size may be preapproved by the Community Development Department).

Application Review & Hearing Procedure: Once the application is determined to be complete, the Community Development Department (CDD) will initiate the review and scheduling of the application. This process includes:

Review: As part of the review process the Community Development Department will evaluate the application for consistency with all applicable City & Borough of Juneau codes and adopted plans. Depending on unique characteristics of the permit request, the application may be required to be reviewed by other municipal boards and committees. During this review period, the Community Development Department may also send the application out for a 15-day agency review period. Review comments may require the applicant to provide additional information, clarification, or submit modifications/alterations for the proposed project.

Hearing: All Flood Zone Exceptions must be reviewed by the Board of Adjustment. Once an application has been deemed complete and has been reviewed by all applicable parties the Community Development Department will schedule the application for the next appropriate meeting.

Public Notice Responsibilities: Flood Zone Exception requests shall be given proper public notice, which consists of the following:

Community Development Department: Will give notice of the pending Planning Commission meeting and its agenda in the local newspaper a minimum of 10-days prior to the meeting. Furthermore, the department will mail abutters notices to all property owners within 500-feet of the project site.

FROM THE FLOOD ZONE; IT MAY SEVERELY LIMIT OR PREVENT THE ABILITY TO RECEIVE FEDERALLY-BACKED FLOOD INSURANCE; AND, IF REQUIRED, FLOOD INSURANCE MAY INCREASE WITH THE APPROVAL OF THE REQUEST.

INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED



City and Borough of Juneau
Engineering & Public Works Department
155 Heritage Way
Juneau, Alaska 99801
Telephone: 586-0800

TO: Jill Lawhorne, CBJ CDD Director
DATE: June 30, 2025
FROM: Nate Rumsey, CBJ EPW Deputy Director 
THRU: Denise Koch, CBJ EPW Director
RE: HESCO Barrier Phase 1 Flood Zone Exception Application

The purpose of this letter is to provide narrative information related to documentation and rationale supporting a Flood Zone Exception Application for the City and Borough of Juneau's (CBJ) HESCO Barrier, Phase 1 project.

The sole purpose of the HESCO Barrier Phase 1 project is to reduce community flood risk associated with possible future Suicide Basin glacial lake outburst flood (GLOF) events. It was conceived, developed, and directed to provide near-term, non-permanent flood protection for properties along the Mendenhall River impacted by the 2024 GLOF. Due to timing constraints, not all properties could be protected prior to a likely 2025 GLOF. Hence, CBJ elected to sequence the work, with Phase 1 covering the east bank of the Mendenhall River from 4395 Riverside Drive (northern reach) to 9399 Rivercourt Way (southern reach). This area was selected because it offered protection to the greatest number of properties relative to the length of barrier that could be installed in one construction season.

The project included targeted riverbank revetment stabilization at specific locations within the mapped floodway, and the installation of a 2-mile HESCO flood barrier, generally placed above the riverbank and upland of existing revetments. Additional details about the revetment and barrier installation can be found in the attached *HESCO No-Rise Analysis* document dated June 23, 2025.

There are several factors that set this work apart from traditional development. As mentioned above, the sole purpose of this project is to reduce CBJ community flood risk associated with possible future GLOF events. Through professional engineering analysis, including hydraulic and hydrologic modeling performed for CBJ by Michael Baker, International (MBI), the HESCO Barrier Phase 1 project significantly reduces the likely

impacts to public and private properties from a GLOF similar in size (or even slightly larger) than what was seen in 2024. Additionally, modeling shows that these improvements create no discernable rise to the base flood elevation, and no additional flood risk to properties outside the protected area.

Secondly, the materials and products used for the project were specifically selected to prevent or withstand the movement of water, and specifically recommended by the U.S. Army Corps of Engineers (USACE) Floodfighting Center of Excellence for this application. The materials are inherently floodproof and not susceptible to flooding. Additionally, the revetment materials and HESCO barrier are required to be located adjacent to the floodway to carry out their intended function.

Under ideal circumstances, a project of this nature could be designed, permitted, procured and executed in a traditional manner. However, due to the significantly shortened timeframe to provide near-term flood fighting protection, this project was carried out based on best professional judgment of licensed CBJ engineers in consultation with the U.S. Army Corps of Engineers (hydraulic engineers, floodfighting experts, and contracted technical advisors), and in tandem with the development of a 2D surface water hydraulic and hydrologic model of the Mendenhall River under possible GLOF conditions.

Due to the compressed timeframe to complete this work, and because a standard step backwater analysis was not performed as a part of the no-rise analysis, a flood zone exception is requested. Specifically, exceptions from CBJ

- (1) [CBJ 49.70.400(e)(3)(E)] – Description of the plan for maintenance of the altered portion of the watercourse so that the flood-carrying capacity is not diminished.
- (2) [CBJ 49.70.400(f)(4)] – Control filling, grading, dredging, and other development that may increase flood damage.
- (3) [CBJ 49.70.400(f)(5)] – Prevent or regulate the construction of flood barriers that will unnaturally divert floodwaters or that may increase flood hazards in other areas.
- (4) [CBJ 49.70.400(g)(1)(A)] – Design, modify, and anchor new construction and substantial improvements to prevent flotation, collapse, or lateral movement of the structure(s)
- (5) [CBJ 49.70.400(g)(5)] – Floodplain development permit requirements.
- (6) [CBJ 49.70.400(i)(2)] – Encroachments, including fill, new construction, and other development, except subdivisions, within a floodway are prohibited unless an engineer licensed in the State of Alaska submits a hydrologic and hydraulic analyses to the director indicating that the encroachment would not result in any increase in flood levels during the occurrence of the base flood discharge. The hydrologic and hydraulic analyses must be performed in accordance with standard engineering practice acceptable by the Federal Emergency Management Agency.

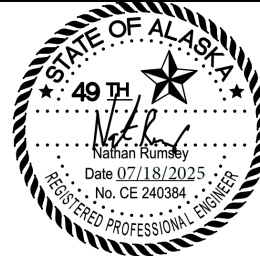
Hydrologic modeling files associated with the “No-Rise Analysis” are located in CBJ electronic public folders and are available for review. *HESCO Technical Specifications* and *HESCO Construction Guide for Engineers* are included as attachments 2 and 3 for the Flood Zone Exception Application, respectively, and provide information regarding the floodproofing of the HESCO product as well as the manufacturer’s guidelines for installation.

Installation work was carried out in accordance with manufacturer’s guidelines and modified as necessary based on site considerations, with U.S. Army Corps of Engineers Technical Advisor and manufacturer’s representative guidance for the duration of the project. Maintenance of the modified watercourse will adhere to current CBJ practices for armoring work, and to maintenance and repair procedures outlined in the *HESCO Construction Guide for Engineers* document.



City and Borough of Juneau
Engineering & Public Works Department
155 Heritage Way
Juneau, Alaska 99801
Telephone: 586-0800

TO: Jill Lawhorne, CBJ CDD Director
DATE: June 30, 2025
FROM: Nate Rumsey, CBJ EPW Deputy Director
RE: HESCO Barrier Phase 1 Project No-Rise Analysis



The purpose of this memorandum is to demonstrate that the proposed HESCO Barrier Phase 1 Project does not cause a rise in the 100-year flood elevations along the Mendenhall River.

Background: The City and Borough of Juneau (CBJ) authorized the execution of the subject project subsequent to Federal, State, and Local Emergency Declarations stemming from glacial lake outburst flooding (GLOF) which occurred in August, 2024. The project includes installation of HESCO flood barriers and associated bank revetment to protect the Mendenhall Valley from future, likely GLOF flooding. This project covers the east bank of the Mendenhall River from 9399 Rivercourt Way upstream to 4395 Riverside Drive (Figure 1).



Figure 1: Project Location (highlighted)

This section of the Mendenhall River is located in a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA) Zone AE, and the improvements include several riprap revetments that are located within the mapped floodway. Additionally, a 2-mile, continuous temporary flood barrier was installed along the east bank of the Mendenhall River from 9399 Rivercourt Way upstream to 4395 Riverside Drive. CBJ contracted with Michael Baker, International (MBI) to perform hydrologic and hydraulic analyses in accordance with standard engineering practice to determine the potential increase in flood levels within the community during the occurrence of the base flood discharge due to this project.

FEMA Information for this Area: The FEMA SFHA information for the project area is provided by the Flood Insurance Study (FIS) for the City and Borough of Juneau and the Flood Insurance Rate Maps (FIRM), numbers 02110C1239E, 02110C1238E, 02110C1526E, and 02110C1527E (Attachments 1 through 4), all dated September 2020. A comparison of SFHA boundaries along the project path to the alignment of the HESCO barrier is shown in Attachment 5.

Through CBJ, MBI developed a two-dimensional surface water model utilizing the latest current Hydrologic Engineering Center's River Analysis System (HEC-RAS, USACE 2024) software (v6.6) incorporating the best available data. The structure and content of the model meets the typical standards of a 2D Base Level Engineering (BLE) Level D model (FEMA 2021) by incorporating hydraulic structures and calibrating historical data but not including channel bathymetry. The selected level of modeling detail was chosen based on the best available data and compressed project schedule.

Description of Proposed Improvements: As this project was directed subsequent to the aforementioned Federal, State, and Local Emergency Declarations, and in anticipation of likely future GLOF flooding in the summer of 2025, traditional design documents were not issued for construction for the proposed work. The work incorporated two primary components:

First, revetments consisting of Class III riprap and shot rock, were stabilized by excavating existing material from the riverbank and replacing in a manner as to not decrease cross-sectional area or flow capacity. This revetment work was carried out at the following locations:

- 3835 - 3851 Killewich Drive (5 parcels)
- 3495 – 3499 Meander Way (4 parcels)
- 9387 Rivercourt Way - 3323 Meander Way (4 parcels)

Attachment 6 shows the revetment locations, typical cross-section comparisons for work at each location, net volumetric increase in floodway capacity due to revetment work, and photographs of bank conditions prior to armoring. The primary purpose of the revetment work is to ensure the integrity of the proposed temporary flood barrier, which is anticipated to remain in place for up to 10 years while a long-term solution is implemented.

Secondly, a continuous, temporary flood barrier was established to prevent floodwater inundation due to future GLOF events. The barrier consists of HESCO Floodline Concertainer™ units which were generally placed above the riverbank and upland of existing revetments.

Baseline for Comparison: The purpose of this analysis is to determine whether, and to what extent, the improvements in the mapped floodway impact flood elevations in the area. In this project area, and since the latest FIRM maps were published, significant bank erosion has occurred in recent years, causing widening of the river's flow channel. This widened channel may have resulted in a drop in flood levels from the published flood elevations. However, our collective analysis did not attempt to quantify changes in the water surface elevation from the original mapped condition. Rather, this analysis focused on understanding impacts to flood elevations compared to existing conditions based on the latest spatial, terrain, map, and hydrology data, which was consolidated through extensive coordination between Federal, State, and local governments. This includes topographic survey and terrain data, and high-resolution imagery collected in October 2024 (after the latest flood event).

Revetment No-Rise Analysis: The revetment activities were determined to cause no rise to the 100-year flood elevations. The rationale for this determination is based on examination of the individual factors that could impact the water surface elevation, each of which are described below.

For this section of the Mendenhall River, the three primary parameters that have the potential to impact the water surface elevation are the cross-sectional area, the Manning's roughness coefficient, and the channel slope. Each of these parameters is discussed below, along with an explanation of how they have been analyzed for this project.

Cross-sectional Area: The most significant model parameter that controls water surface elevation is the channel shape which is represented in a 1D model through channel cross sections. A significant change in channel shape can change the channel's conveyance capacity and potentially impact flood elevations. Generally, reducing the channel's cross sectional area results in a water surface elevation increase, and increasing the channel's cross sectional area results in a water surface elevation decrease.

For the revetment improvements, CBJ Engineering ensured that the armored ground surface closely matched the surveyed ground surface. At each of the parcels where riprap revetments were improved, cross-sections were developed to compare the pre-existing and proposed ground surfaces to ensure that the changes would not result in a reduction in the channel's cross-sectional area and associated conveyance capacity. In each location, the improvements slightly increase the channel's cross-sectional area, which is expected to either maintain or reduce flood elevations. The cross-section comparisons and associated calculations demonstrating net increase in cross-sectional area is provided as Attachment 7.

Manning's Roughness Coefficient "n": The frictional resistance to flow is represented in the FEMA effective HEC RAS 1D model using the Manning's "n" roughness coefficient. Unique roughness values can be assigned for the main channel as well as for each bank. While this parameter does not impact modeling results as much as the channel shape, significant changes to roughness coefficients can result in changes to modeled water surface elevations. Generally, notable increases in Manning's "n" will increase modeled flood elevations and notable decreases in Manning's "n" will decrease modeled flood elevations.

In the project area, the shapes of the pre-existing channel banks were undulating and non-uniform, and the banks were lined with root wads, large voids and other obstructions left by localized bank erosion and sloughing, resulting in obstructed and inefficient water flow along the riverbank. The FEMA effective model discussed above represents the entire existing channel (both the banks and the main channel) with a Manning's "n" value of 0.033. Generally, the roughness of the banks is expected to be higher than the roughness of the main channel, but because the same value is used for both the main channel and the banks, this value is understood to be a composite value representing the average flow resistance for the entire channel.

Under the post-construction conditions, the new riprap revetments are uniform and non-undulating. Providing a uniform, non-undulating surface is expected to reduce the overall channel flow resistance and improve flow efficiency, which would decrease proposed water surface elevations.

The banks were lined with Class III riprap and shot rock. The roughness value of these materials is estimated to range from 0.03 to 0.04 under flood conditions. Understanding that the composite roughness of the entire existing channel is 0.033, the newly installed riprap is not expected to increase the channel roughness or impact the water surface elevation at flood events.

Longitudinal Slope: A channel's longitudinal slope impacts the channel's conveyance capacity. In this case, the channel's longitudinal slope is unchanged by the revetment, and will not impact the water surface elevations.

Surface Water Model Analysis: Through use of the MBI-developed model, an analysis was performed to identify any impact to the 100-year flood elevations due to the placement of HESCO flood barriers using a simulated 1% annual exceedance probability flood event, both with and without HESCO barriers. This analysis considered potential surface water rise upstream, along, and downstream of the proposed work. No rise was indicated within the resolution provided by the model. See Attachment 8 for MBI's *Mendenhall River Preliminary 2D Surface Water Model Report*. Note that MBI's model was developed directly from existing conditions, and not derived from the FEMA Effective Model. With that, the analysis of the impact of HESCO flood barriers on 100-year flood elevations was not performed specifically to adhere to the traditional FEMA No-Rise Certification model comparison scenarios. See Attachment 9 for more information about BLE models.

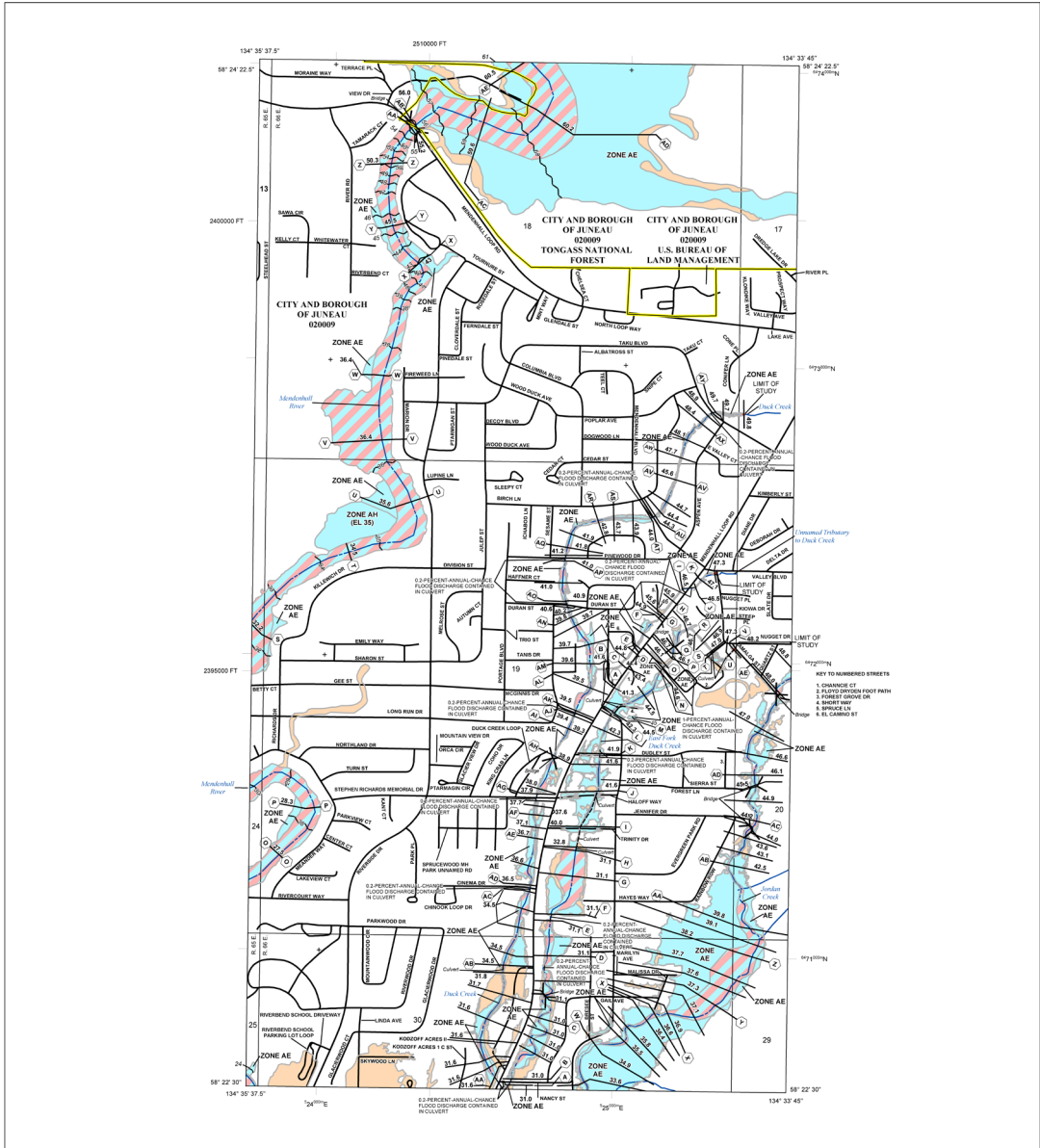
Conclusion: The HESCO Barrier Phase 1 project will not cause a rise in the 100-year water surface elevations of the Mendenhall River. This determination was made through both a careful analysis of key channel parameters that would drive a water level rise, as well as through hydrologic and hydraulic modeling.

If you have any questions regarding this analysis or if you would like to discuss this memorandum, please feel free to contact me at nate.rumsey@juneau.gov or 907.586.0800 x4182.

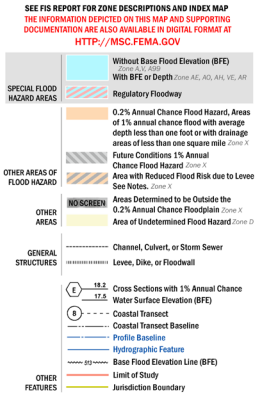
Attachments:

1. FIRM Panel 02110C1239E (1 page)
2. FIRM Panel 02110C1238E (1 page)
3. FIRM Panel 02110C1526E (1 page)
4. FIRM Panel 02110C1527E (1 page)
5. Comparison of barrier alignment to SFHA (2 pages)
6. Revetment Construction Details (11 pages)
7. Revetment Cross-Section Comparisons by Location (20 pages)
8. Mendenhall River Preliminary 2D Surface Water Model Report (37 pages)
9. FEMA: Frequently Asked Questions about Base Level Engineering (5 pages)

Attachment 1: FIRM Panel 02110C1239E



FLOOD HAZARD INFORMATION



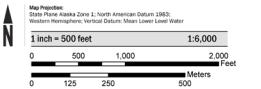
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For information and questions about this map, available products associated with this FIRM including future versions of the FIRM, visit our website at msc.fema.gov or the National Flood Insurance Program website at nfi.fema.gov. For more information, please visit the FEMA Map Information Exchange at mief.fema.gov or call the FEMA Map Service Center at 1-877-385-3227 or visit the FEMA Map Service Center website at msc.fema.gov. For more information, please visit the FEMA Map Information Exchange at mief.fema.gov or call the FEMA Map Service Center at 1-877-385-3227 or visit the FEMA Map Service Center website at msc.fema.gov.

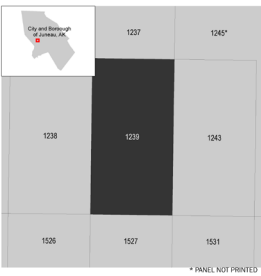
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Base map information shown on this FIRM was provided in digital format by the City and Borough of Juneau, Alaska Department of Natural Resources (DNAR), Division of Land Management (DLM), 1234 Front Street, and the United States Geological Survey (USGS). This information was compiled at various map scales during the time period 1980-2010. Other information was derived from digital orthophotography at a 4-inch resolution from photography dated 2010.

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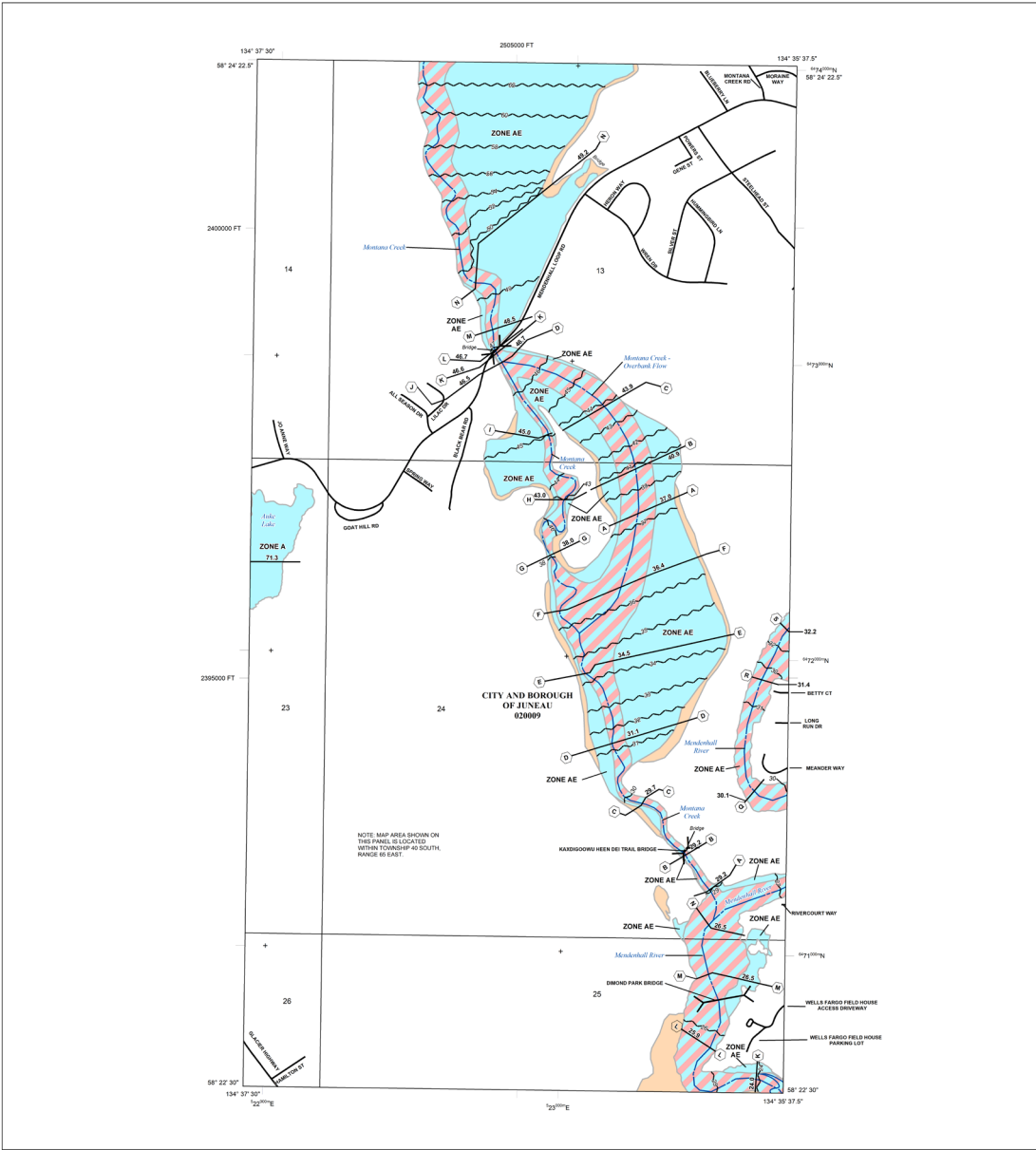
FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
CITY AND BOROUGH OF JUNEAU, AK
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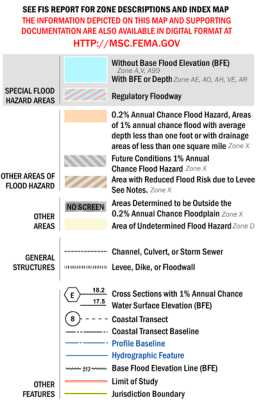
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MAP REVISION: SEPTEMBER 18, 2020

Attachment 2: FIRM Panel 02110C1238E



FLOOD HAZARD INFORMATION



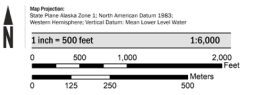
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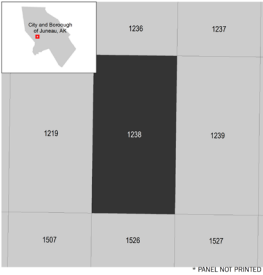
To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-454-6027.

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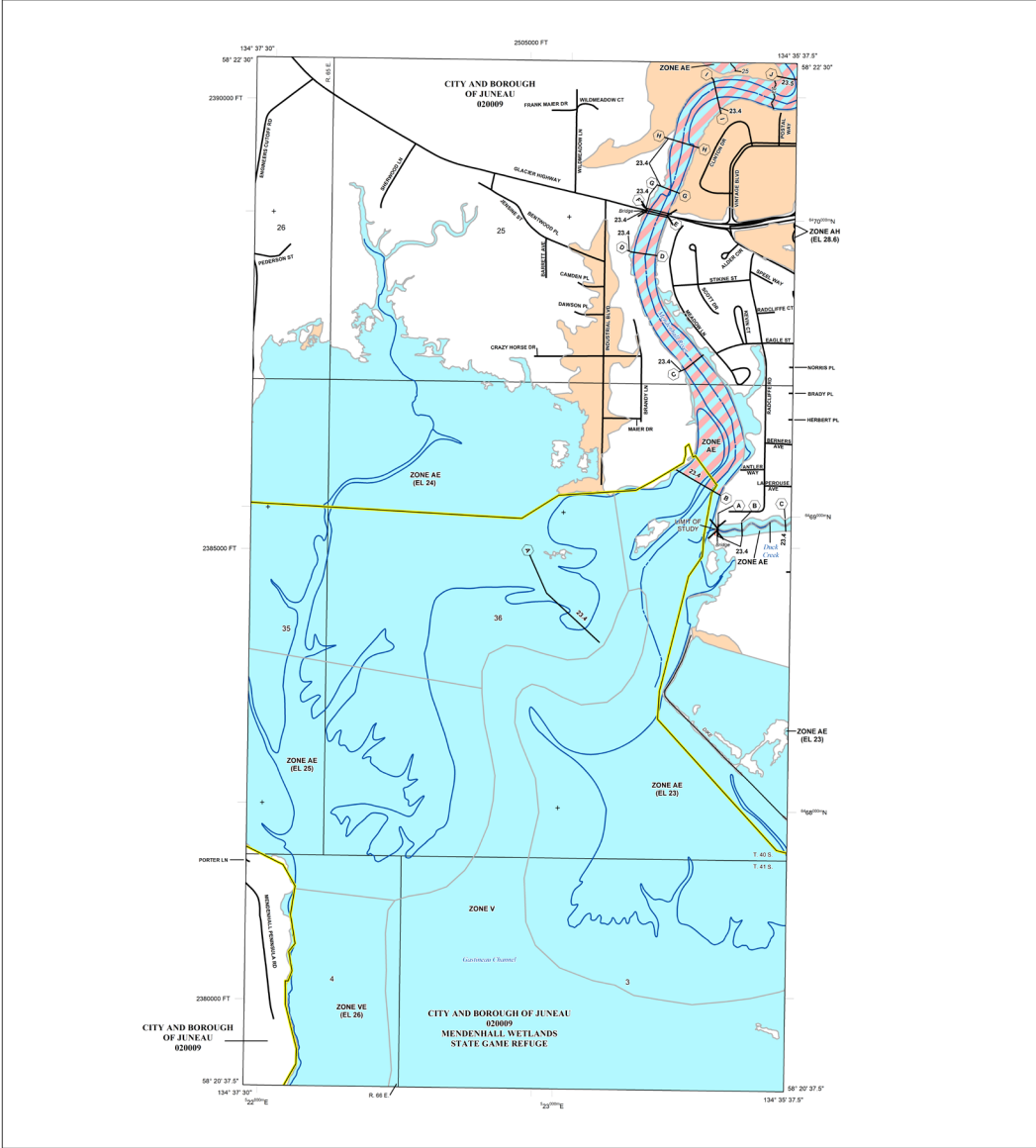
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MAP NUMBER
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MAP REVISION
SEPTEMBER 18, 2020



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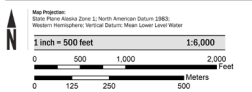
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THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

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SPECIAL FLOOD HAZARD AREAS	Regulatory Floodway	0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
OTHER AREAS OF FLOOD HAZARD	Future Conditions 1% Annual Chance Flood Hazard Zone X Areas with a Reduced Flood Potential due to Levees See Notes	0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
OTHER AREAS	NO SCREEN	Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X 0.2% Annual Chance Floodplain Zone X 0.2% Annual Undetermined Flood Hazard Zone X
GENERAL STRUCTURES	Channel, Channel, or Storm Sewer Levee, Dike, or Floodwall	Channel Crosses with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transport Coastal Transport Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURE	1% C CB P H B	1% C CB P H B

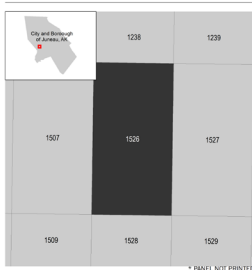
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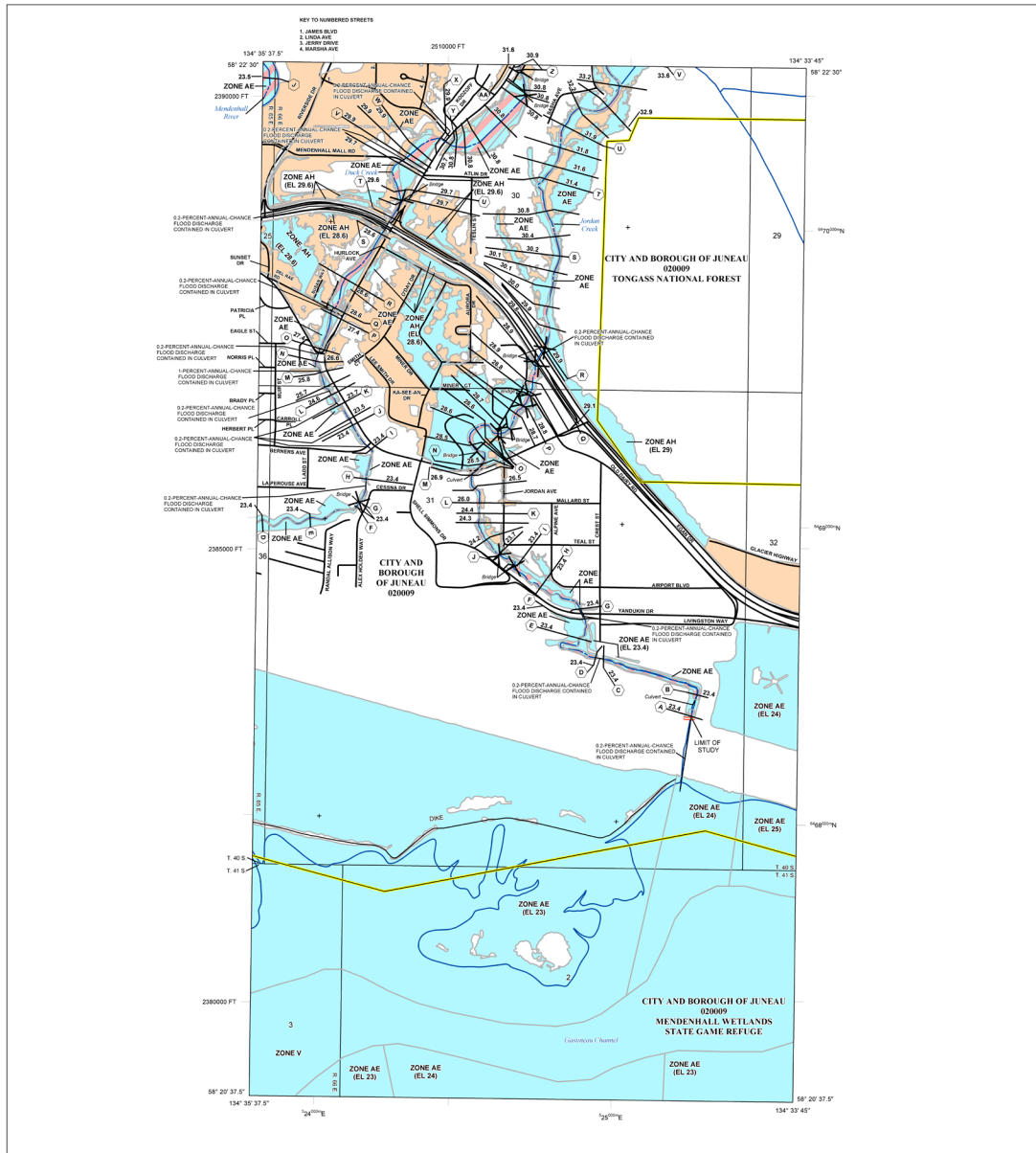
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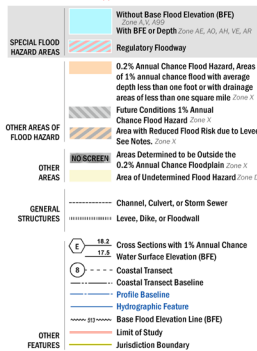
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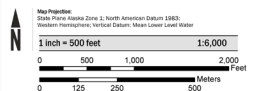
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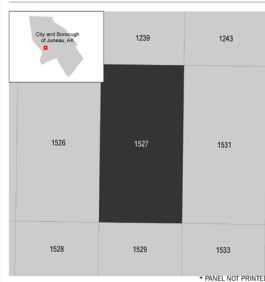
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PANEL 1527 OF 2700



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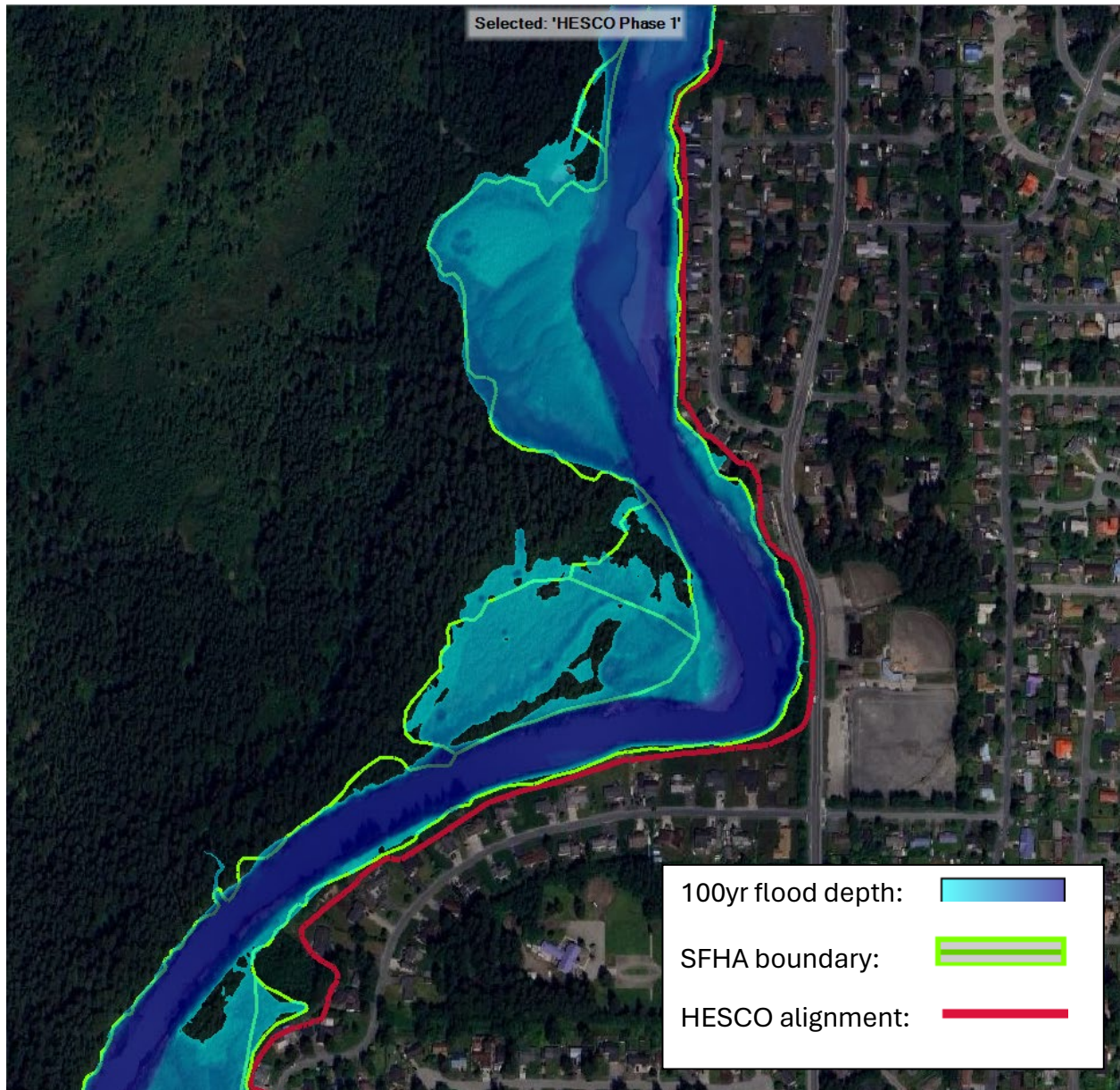
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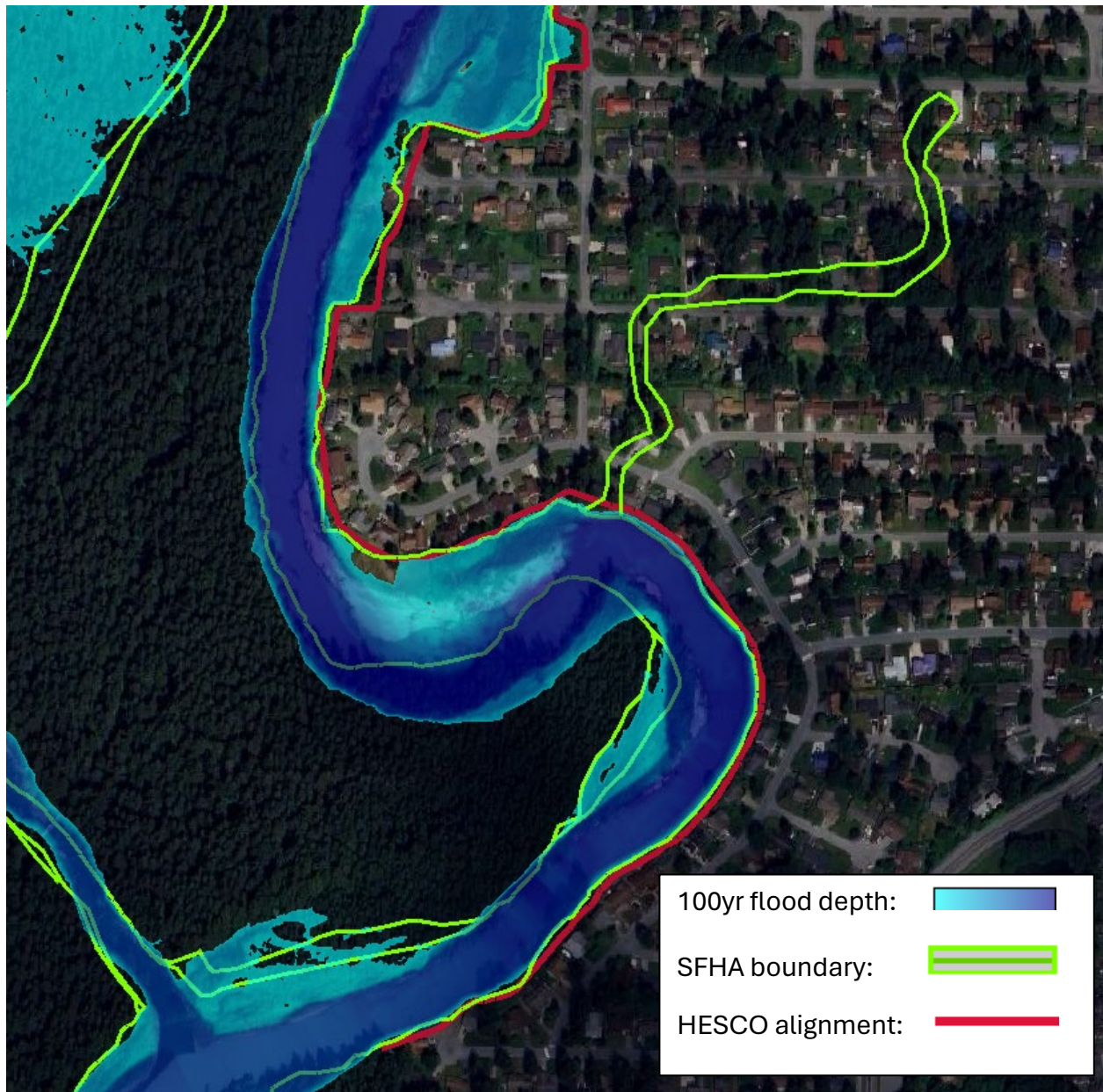
VERSION NUMBER 0000

MAP NUMBER
02110C1527E

MAP REVISED
SEPTEMBER 18, 2020



Attachment 5: A comparison between the location of the SFHA boundary and the location of the HESCO barrier (Northern extent of project)



Attachment 5: A comparison between the location of the SFHA boundary and the location of the HESCO barrier (Southern extent of project)

Project Name: Riverbank Armoring - HESCO Flood Barrier Phase I -

Project Address: along the east bank of Mendenhall River from 9399 Rivercourt Way north to 4395 Riverside Drive.

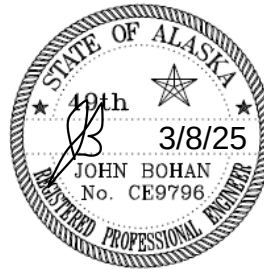
Project Armoring Addresses (along east riverbank of Mendenhall River):

S. Meander: 9387 Rivercourt Way and 3315 to 3323 Meander Way - approx. 365 l.f. armoring

N. Meander: 3491 to 3499 and CBJ Parcel (NHN) Meander Way – approx. 250 l.f. armoring

Killewich: 3835 to 3849 Killewich Drive – approx. 500 l.f. armoring

Applicant: City and Borough of Juneau Public Works and Engineering Department
John Bohan – PE – CE 9796 – City Engineer



Design Approach:

The design approach followed for the riverbank armoring is to ensure the FEMA regulatory floodway cross sectional area is maintained or increased. The strategy is to remove the erodible soils and replace them with non-erodible riprap and not decrease the cross sectional area of the FEMA regulated floodway.

The design utilized an evaluation of the horizontal alignment to best fit the existing riverbank alignment with the design armoring cross section, sloped at 1.5H to 1V. to ensure bank stability, and maintain the existing streambank alignment. Survey data provided by the DOWL October 2024 UAV survey and site validations were used to generate cross sections and calculate cuts and fills using the average end area method. The generated cross sections and horizontal layout were carefully analyzed to balance cuts and fills and were reworked multiple times to ensure the amount of fill being removed will exceed the amount being places, ensuring the conditions for “replacement in kind” are met and the regulated floodway area is not decreased.

In addition to ensuring the cross-sectional area of the floodway is not restricted and the armored section exceeds the existing unarmored section, the roughness coefficient for riprap armoring ($n=0.03$ to 0.04) is similar to or less than the roughness coefficient for that used by the FEMA effective HEC RAS 1-D model ($n=0.033$) for the Mendenhall River floodway. The existing riverbanks are also undulating and non-uniform with irregularities of root wads, large voids and other obstructions left by localized bank erosion and sloughing, resulting in obstructed and inefficient water flow along the riverbank. The armoring will result in a non-erodible uniform surface that will be more efficient at passing water flow without the obstructions of the eroded riverbank.

The toe of the armoring and the scour toe will follow the adjacent channel bottom and will not change the channel slope or bottom contour, which will not change the flow of the river.

The cross sections and calculations for the armoring at each of the locations are provided at the end of this document.

S. Meander Armoring

The bank armoring at these 4 properties will fill in the gaps left by the 4 homeowners who didn't armor their properties during the adjacent armoring work that occurred in 2022 and 2023. Armoring these properties is vital to ensuring the integrity of the HESCO Flood Barriers to prevent a breach in the barriers that could be caused by continued riverbank erosion. The FEMA Base Flood Elevation used at this location was taken from Section "O" at elevation 27.5, from the FEMA Flood Maps, which is immediately upstream of the armoring area.

9387 Rivercourt Way: a singular property that requires armoring to match the adjacent armored properties. The erosion of the riverbank has created a steep riverbank with highly erodible soils, but being protected by the armoring on each side. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on either side. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 9 cubic yards, creating a larger floodway than currently exists.

3315 to 3323 Meander Way: - three contiguous properties that require armoring to match the adjacent upstream and downstream armored properties. The erosion of the riverbank has created a steep erodible riverbank. The eroded riverbank slopes are steeper on the downstream properties requiring more material removal than the upstream properties to maintain a uniform horizontal alignment matching the exiting river. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on either side. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 131 cubic yards, creating a larger floodway than currently exists.

N. Meander Armoring

The bank armoring at these 4 properties will repair existing riprap bank armoring that has been compromised over many years of changes and downcutting of the river. Rebuilding the existing armoring is critical in this location because the HESCO alignment is confined to very close to the top of the riverbank, requiring a sound riverbank to prevent riverbank erosion from breaching the flood barriers. The FEMA Base Flood Elevation used at this location is elevation 30.4. This elevation was determined by interpolating between FEMA Flood Maps Section "Q" (el. 30.1) 250' downstream of the armoring location and Section "R" (el. 31.4) 1285 upstream of the armoring location.

The general slope of the existing riverbank has some undulations from undermined armoring sloughing and washing away due to bank erosion and river downcutting. Existing riprap that meets the requirements for the new armoring will be salvaged and reused, and the remaining unsuitable and highly erodible soils will be removed and replaced with riprap with shot rock filter. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on either side. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 6 cubic yards, creating a larger floodway than currently exists.

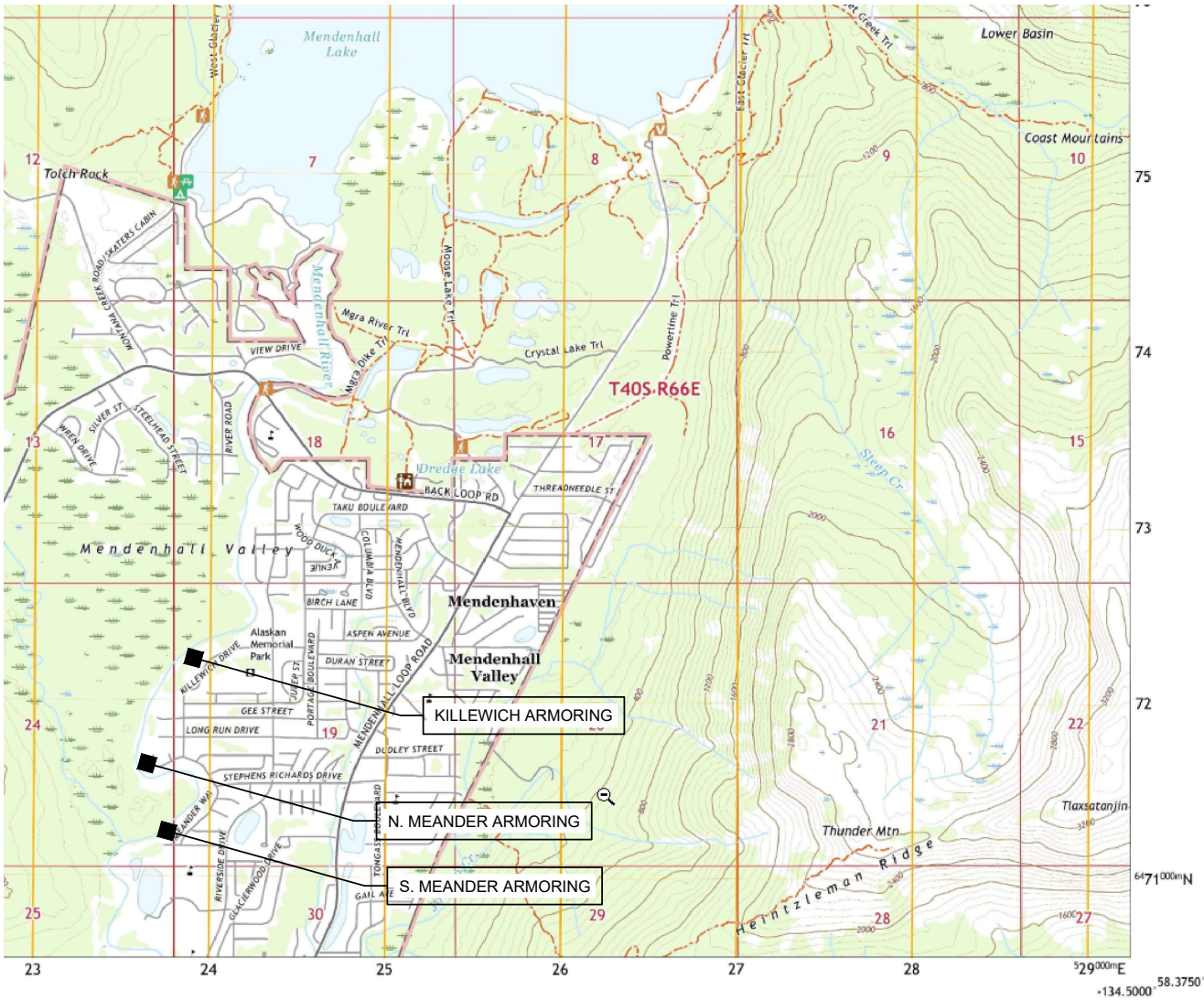
Killewich Armoring

The bank armoring at these 4 properties will repair eroding riverbanks with trees being undermined by the erosion and falling towards the river. The highly erodible soils in this area could mimic what occurred adjacent to the Riverside Condos in the 2023 GLOF, eroding a substantial chunk of land and undermining the buildings. The HESCOs in this location are placed away from the riverbank, but would be compromised if the riverbank were to erode as it is already showing to be doing fairly rapidly.

The riprap section will connect to existing armoring at the upstream end of the work and relatively stable unarmored slope downstream. The FEMA Base Flood Elevation used at this location is elevation 34.5 from FEMA Flood Maps Section "T", which is immediately upstream from the armoring location.

The general slope of the existing riverbank has significant undulations, cavities, undermined tree root wads and variations from sloughing and bank erosion of the fine, highly erodible soils comprising the riverbank. This material will be excavated and replaced with the rip-rap and shot rock filter section to protect the riverbank from further erosion. The topography of the lots drops as the armoring progresses downriver, requiring more material to be excavated from the downstream lots to maintain a consistent horizontal alignment matching the river. The construction of the 1.5H to 1V armoring section will connect to the existing armoring on the upstream side and the existing more stable riverbank on the downstream end. The net amount of material being removed from the FEMA Regulated Floodway by this armoring is 244 cubic yards, creating a larger floodway than currently exists.

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

1	-	COVER AND LOCATION MAP
2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

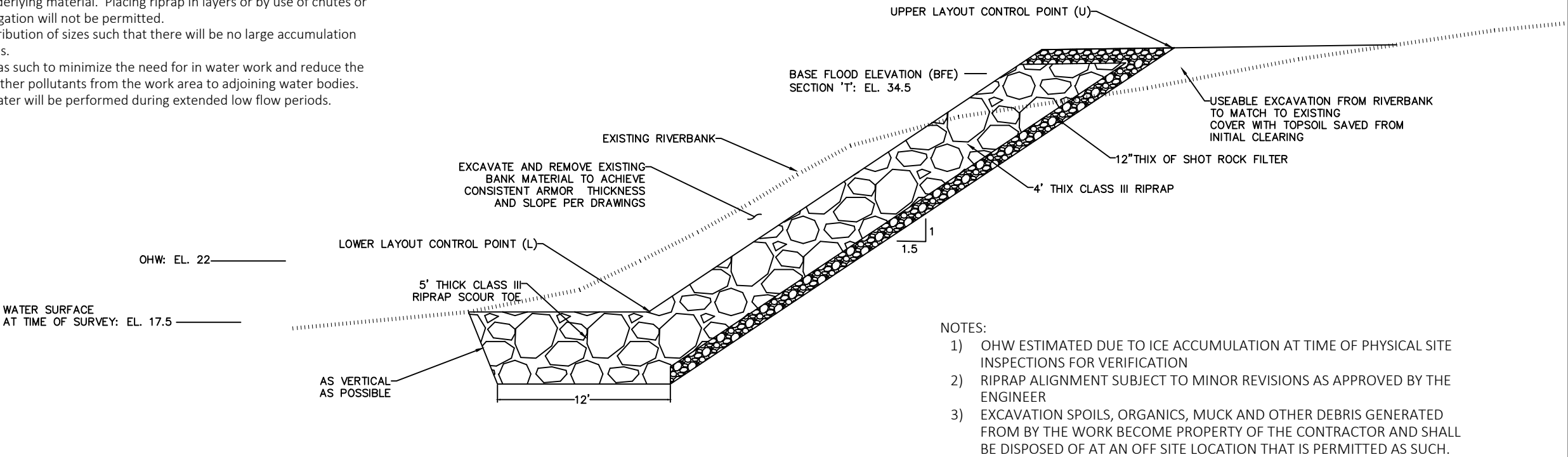
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
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LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 500' ±
 - 4) TOTAL RIPRAP VOLUME: 4,950 CY
 - 5) RIPRAP VOLUME BELOW OHW: 2210CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY

END ARMORING
BLEND INTO
EXISTING RIVERBANK

REDUCE SLOPE OF ARMORING
TO MATCH SHALLOWER
YARD SLOPE

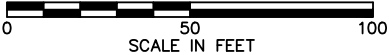
MENDENHALL RIVER

NEW RIVERBANK
ARMORING

BEGIN ARMORING
BLEND INTO EXISTING
BANK ARMORING

KILLEWICH DRIVE

- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

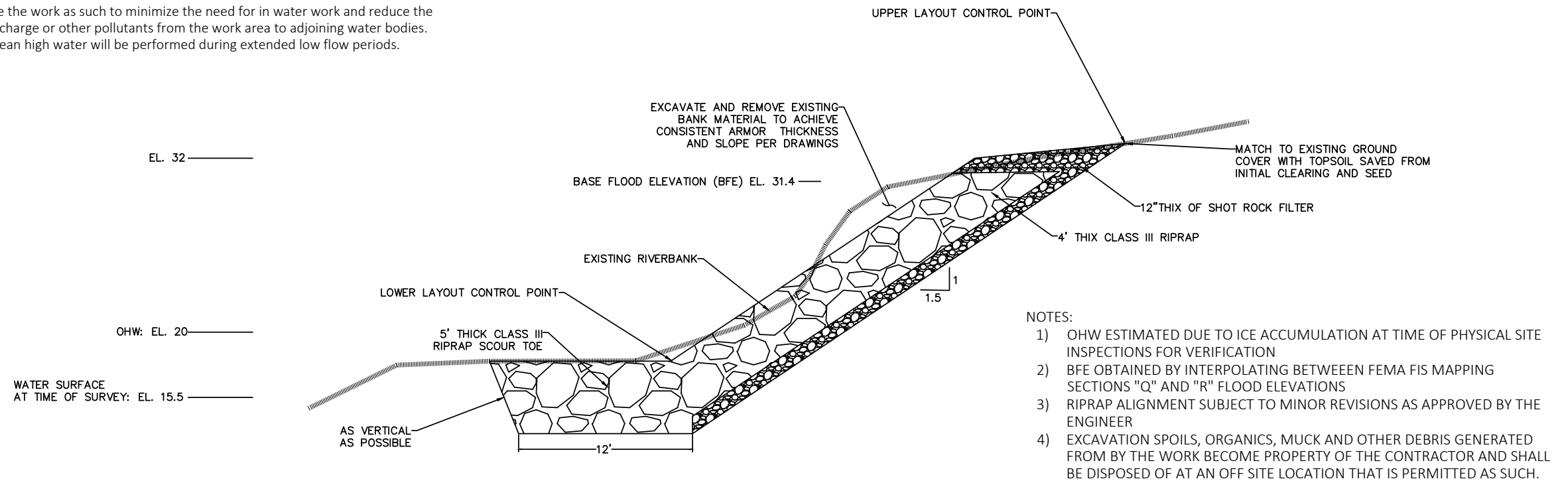
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be placed prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Initials

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ *ALASKA'S CAPITAL CITY*
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

N. MEANDER ARMORING
TYPICAL SECTION

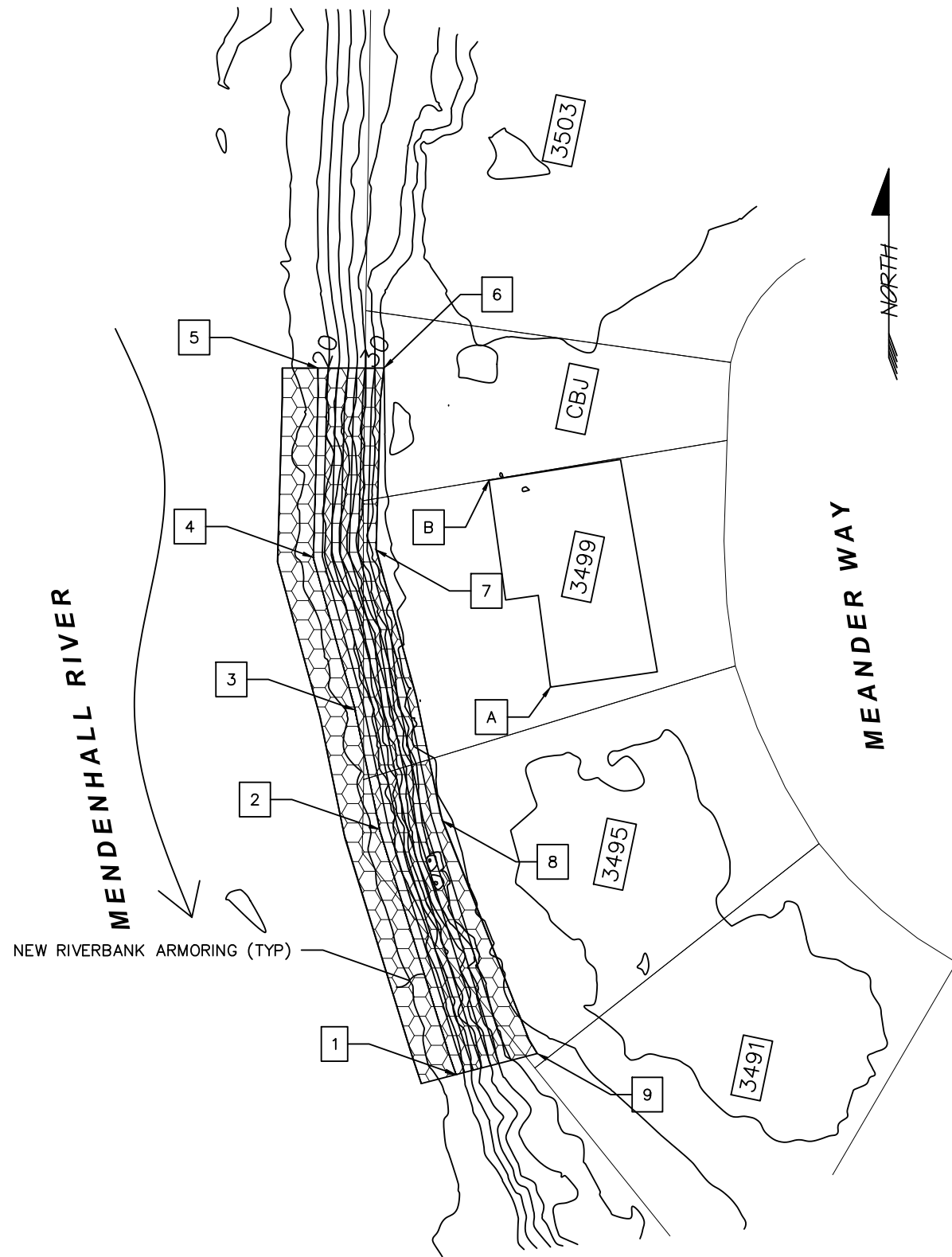
DATE: Feb 2025

	DRAWN BY: STAFF
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SCALE: NOT TO SCALE

SHEET:

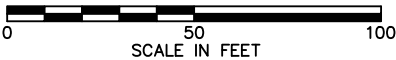
4 of 7



- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 1540 CY
 - 5) RIPRAP VOLUME BELOW OHW: 770 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 7 CY

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2393896.5525	2507610.8681	18.0	Match TO EXISTING BANK
2	2393978.9938	2507585.2101	18.0	
3	2394019.0284	2507577.0045	18.0	
4	2394070.3146	2507562.9437	18.0	
5	2394133.9212	2507564.5190	18.0	MATCH TO EXISTING RIPRAP
6	2394133.9212	2507586.6734	32.0	MATCH TO EXISTING RIPRAP
7	2394072.8377	2507584.0270	32.0	
8	2393981.8148	2507606.2823	32.0	
9	2393903.6179	2507638.1839	32.0	MATCH TO EXISTING BANK
A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT – NW CNR HOUSE #3499

- NOTES:
- 1) THIS WORK WILL BE TO RECONSTRUCT AN EXISTING RIPRAP ARMORED BANK. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS ELEVATION 30.4. THIS HAS BEEN INTERPOLATED BETWEEN FEMA SECTIONS 'Q' AND 'R'
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

N. MEANDER ARMORING

CONSTRUCTION PLAN

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

5 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

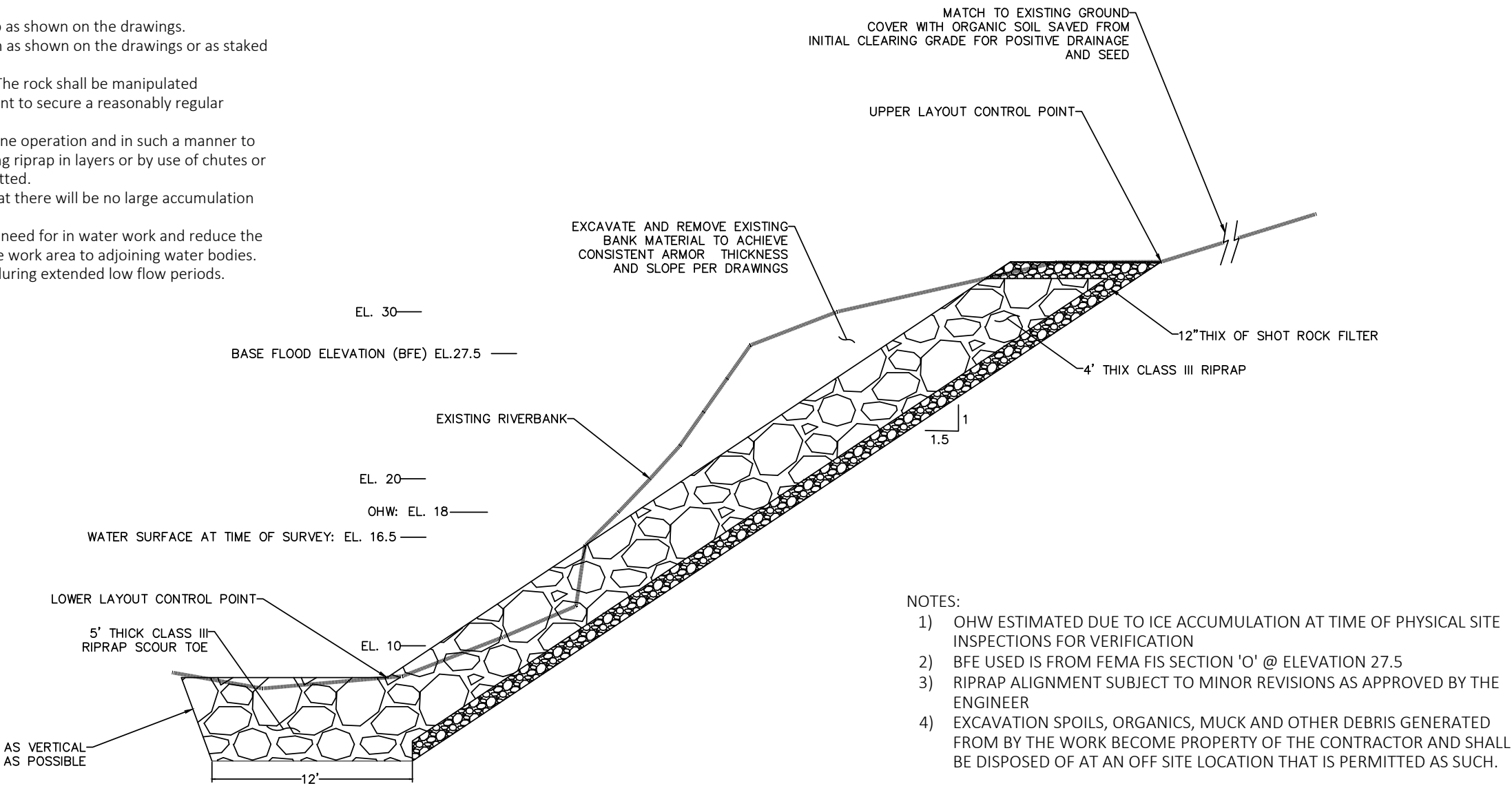
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) BFE USED IS FROM FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 3) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

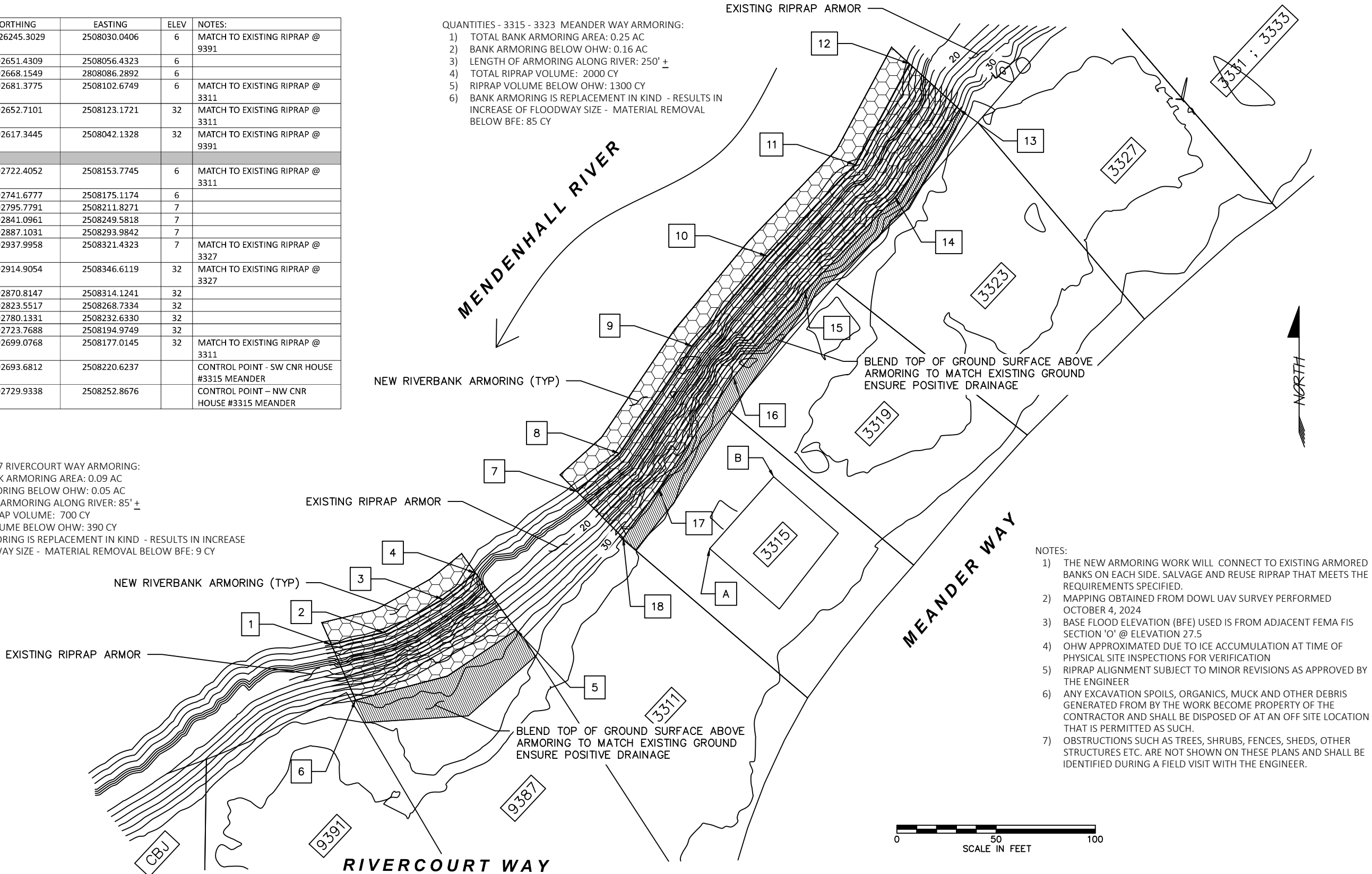
SCALE: NOT TO SCALE

SHEET:
6 of 7

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 85' ±
 - 4) TOTAL RIPRAP VOLUME: 700 CY
 - 5) RIPRAP VOLUME BELOW OHW: 390 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 2000 CY
 - 5) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**S. MEANDER ARMORING
CONSTRUCTION PLAN**

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of **7**

Killewich - Typical Bank Erosion

Eroding Riverbank - 3843 and 3847 Killewich – October 2024



N. Meander - Failing Armoring and Bank Erosion

Remaining Bank armoring 3499,3495 Meander Way

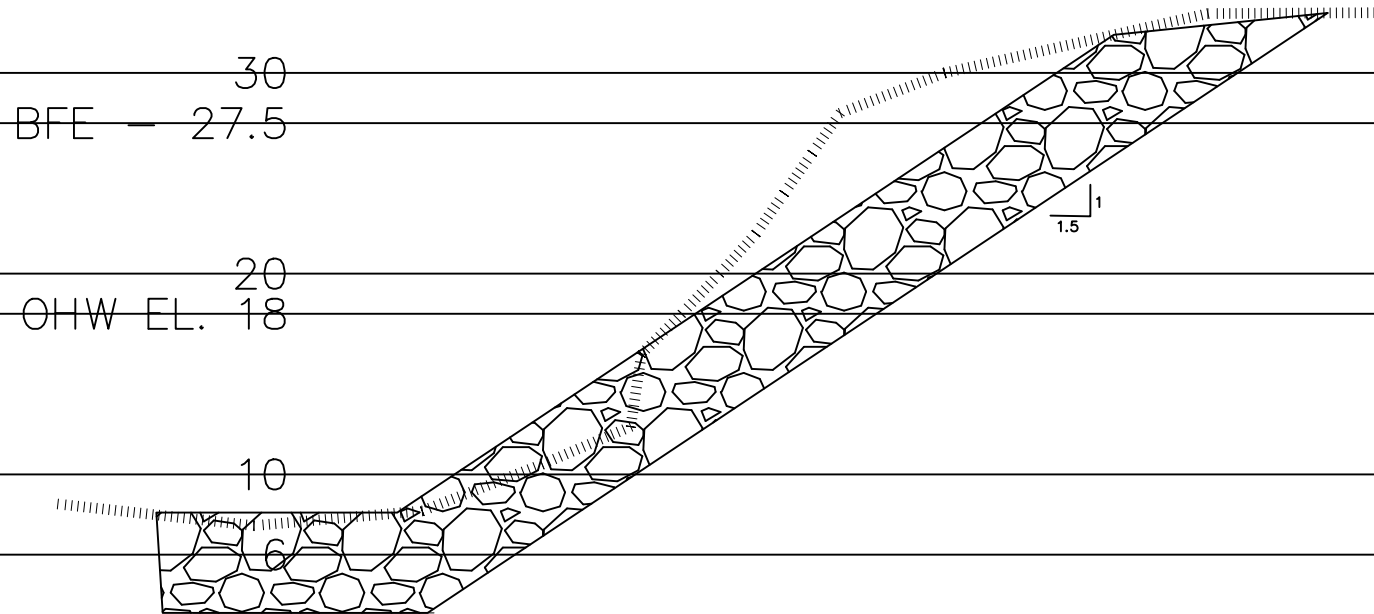


S. Meander - Typical Bank Erosion

Eroding Riverbank - 3323,19,15 Meander Way, October 2024



S. MEANDER ARMORING SECTIONS AND CALCULATIONS

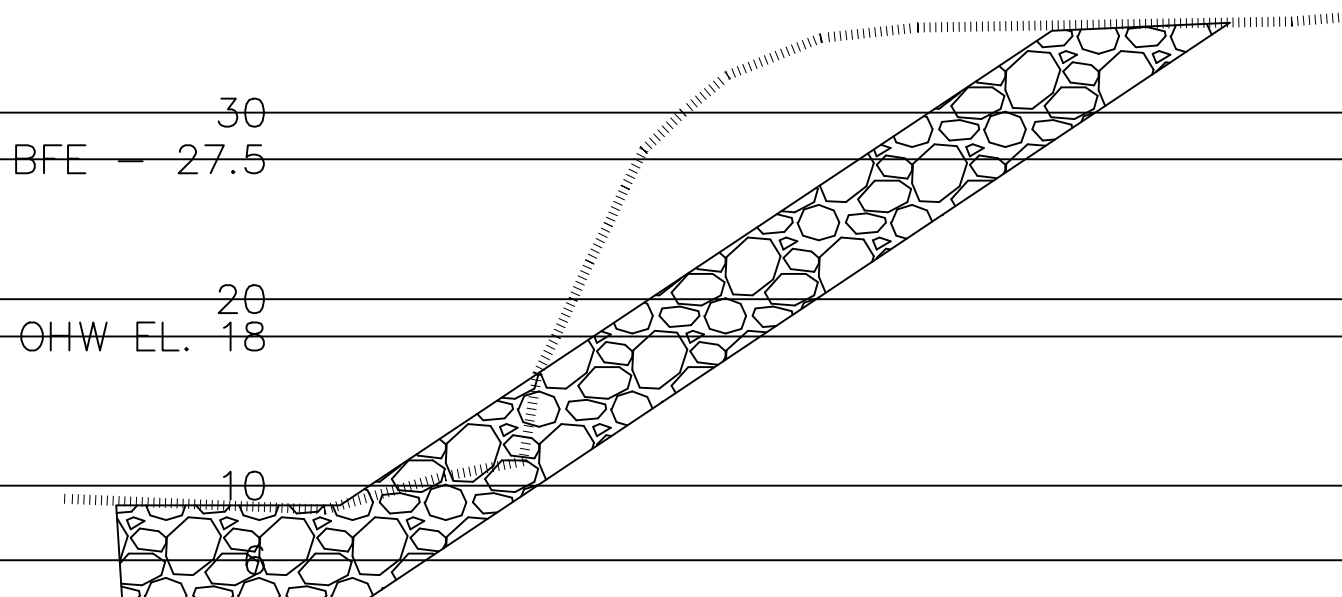


3315

CUT area below BFE: 39.9 s.f.

FILL area below BFE: 24.9 s.f.

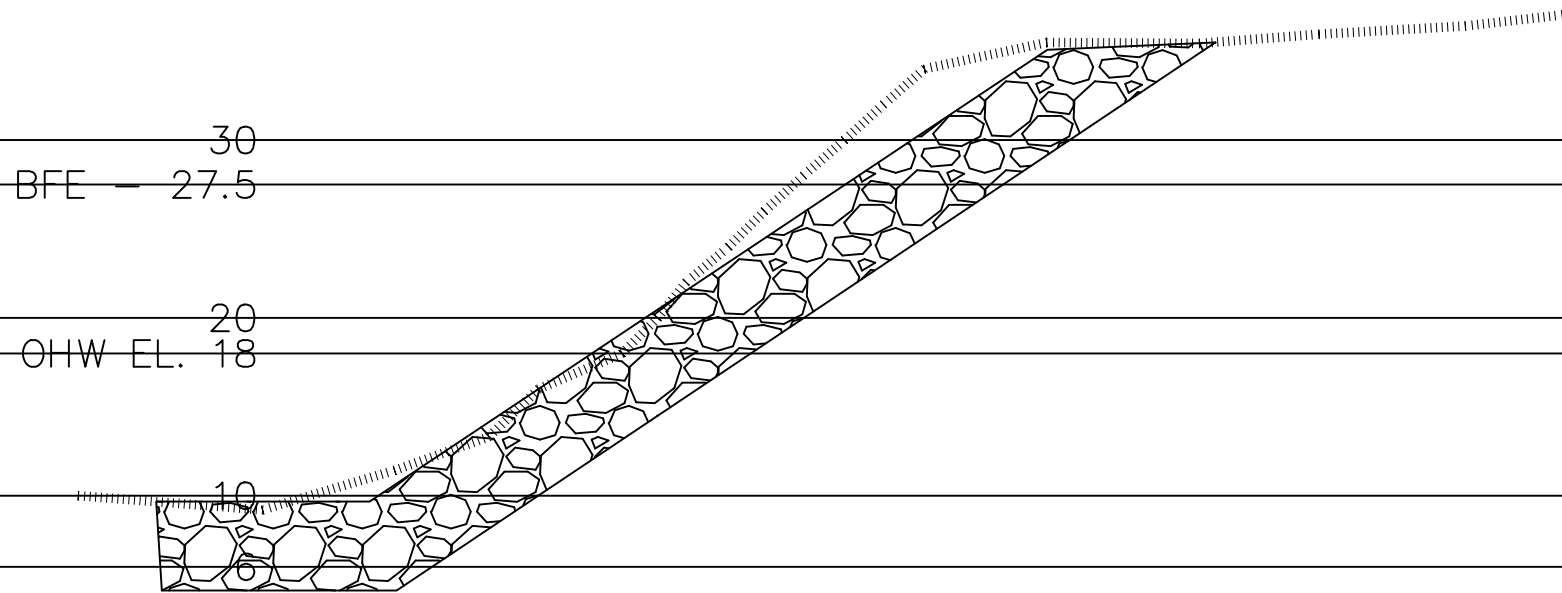
NET area below BFE: CUT 15.0 s.f.



3319 D/S

CUT area below BFE: 73 s.f.
FILL area below BFE: 21.4 s.f.

NET area below BFE: CUT 51.6 s.f.

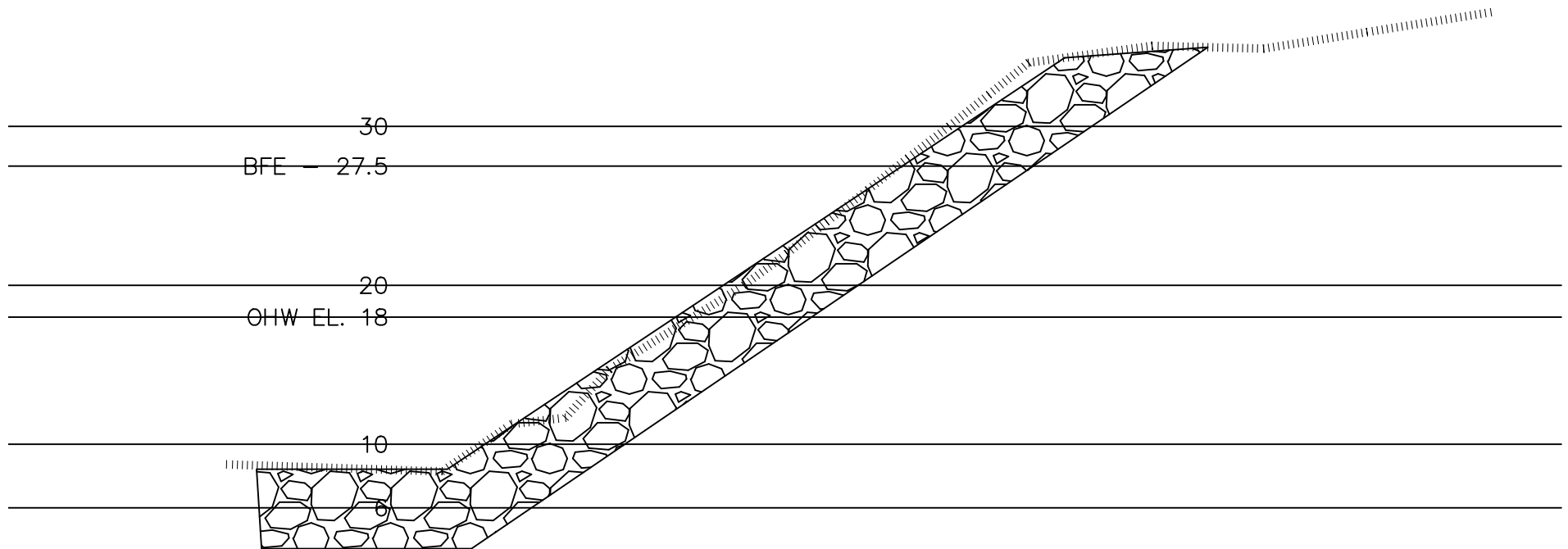


3319 U/S

CUT area below BFE: 15.5 s.f.

FILL area below BFE: 8.6 s.f.

NET area below BFE: CUT 6.9 s.f.



3323

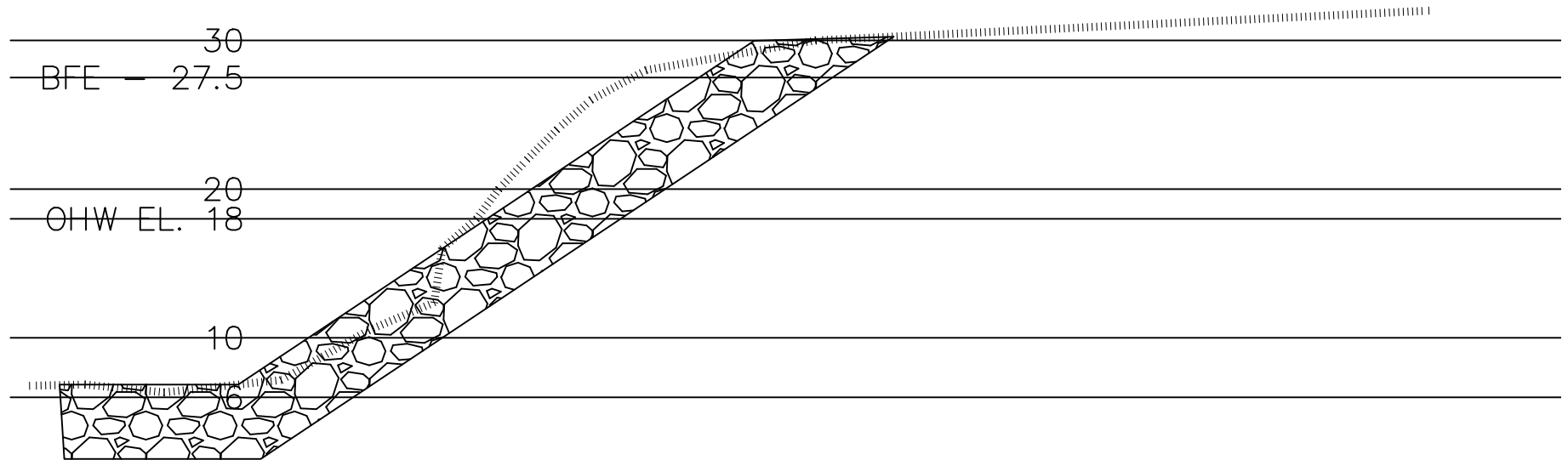
CUT area below BFE: 1.5 s.f.

FILL area below BFE: 14.3 s.f.

NET area below BFE: FILL 12.8 s.f.

Bank Armoring 3315 Meander to 3323 Meander/way						
(+) = CUT (-) = FILL						
	l (ft)	start area	end area	average	volume (cf)	CY
0 to 3315	29	0	15	7.5	217.5	8.1
3315 to 3319 d	65	15	51.6	33.3	2164.5	80.2
3319d to u	58	51.6	6.9	29.25	1696.5	62.8
3319u to 3323	65	6.9	-12.8	-2.95	-191.8	-7.1
3323 to end	56	-12.8	0	-6.4	-358.4	-13.3
					3528.4	130.7
130.7 Cubic Yard Cut for 3315 to 3323 Armoring						

RIVERCOURT WAY (S. MEANDER) ARMORING SECTIONS AND CALCULATIONS



9387 D/S

CUT area below BFE: 33 s.f.

FILL area below BFE: 29.2 s.f.

NET area below BFE = CUT 4.2 s.f.

30
BFE — 27.5

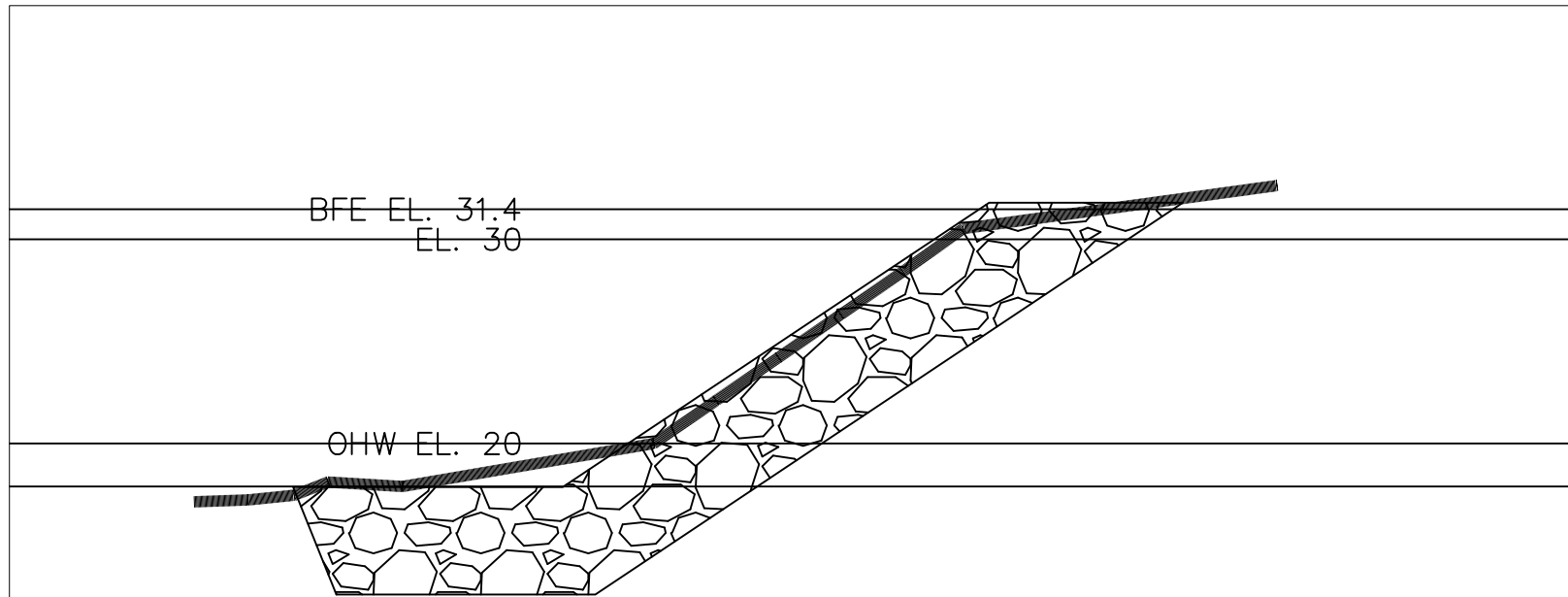
20
OHW EL. 18

10

9387 U/S
CUT area below BFE: 35.9 s.f.
FILL area below BFE: 32.6 s.f.
NETarea below BFE: CUT 3.3 s.f.

Bank Armoring 9387 Rivercourt Way (+) = CUT (-) = FILL						
	l (ft)	start area	end area	average	volume (cf)	CY
0 to 9387 D	30	0	4.2	2.1	63	2.3
9387 D to U	36	4.2	3.3	3.75	135	5.0
9387U to end	22	3.3	0	1.65	36.3	1.3
					234.3	8.7
8.7 Cubic Yard Cut for 9387 Armoring						

N. MEANDER ARMORING SECTIONS AND CALCULATIONS

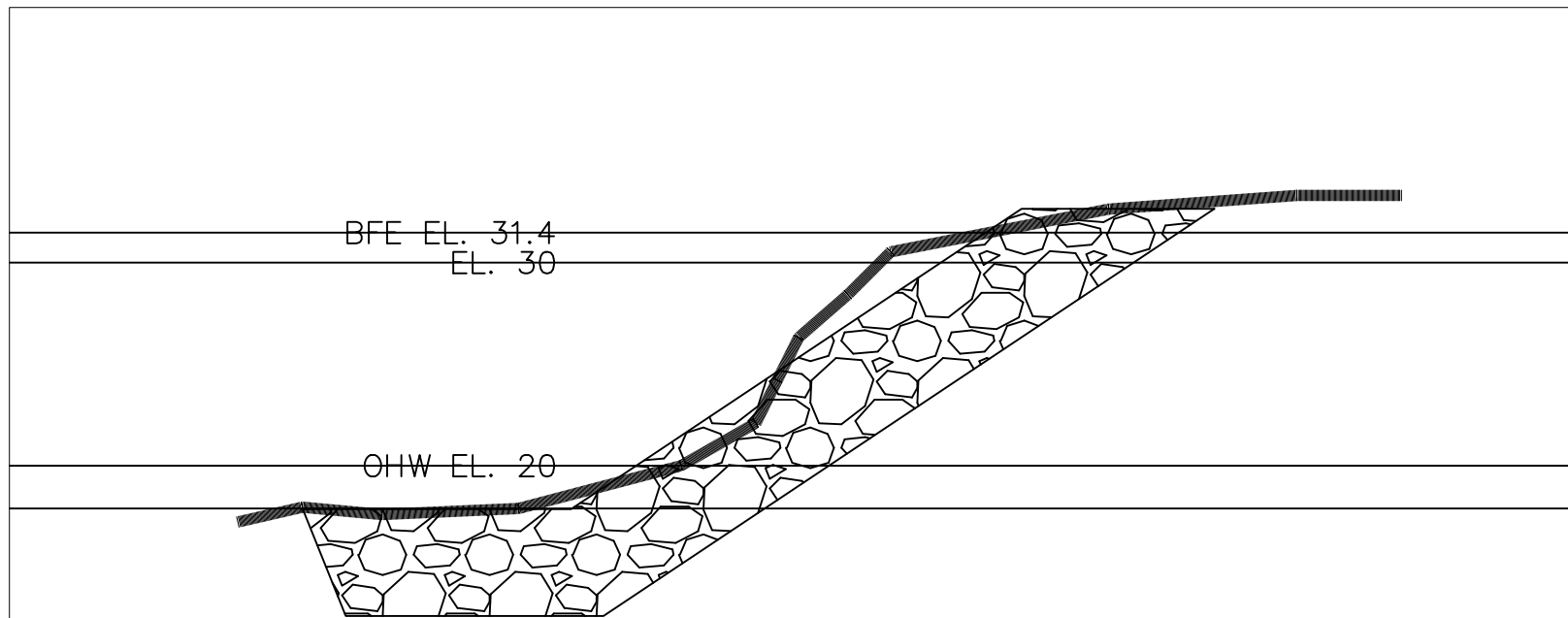


3495 Downstream

Cut area below BFE: 6.5 s.f.

Fill area below BFE: 9.9 s.f.

Net area below BFE: FILL 3.4 s.f.

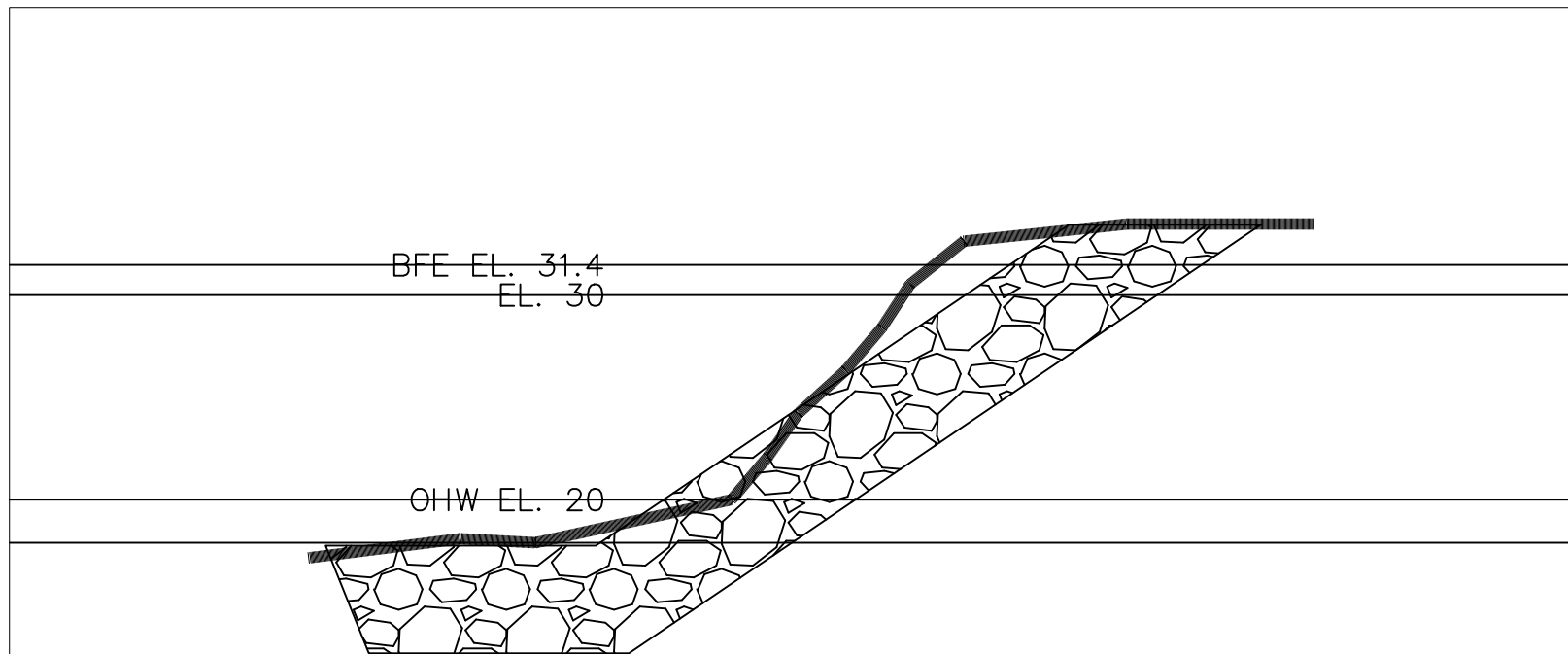


3495 Upstream

Cut area below BFE: 12.3 s.f.

Fill area below BFE: 9.0 s.f.

Net area below BFE: CUT +3.3 s.f.

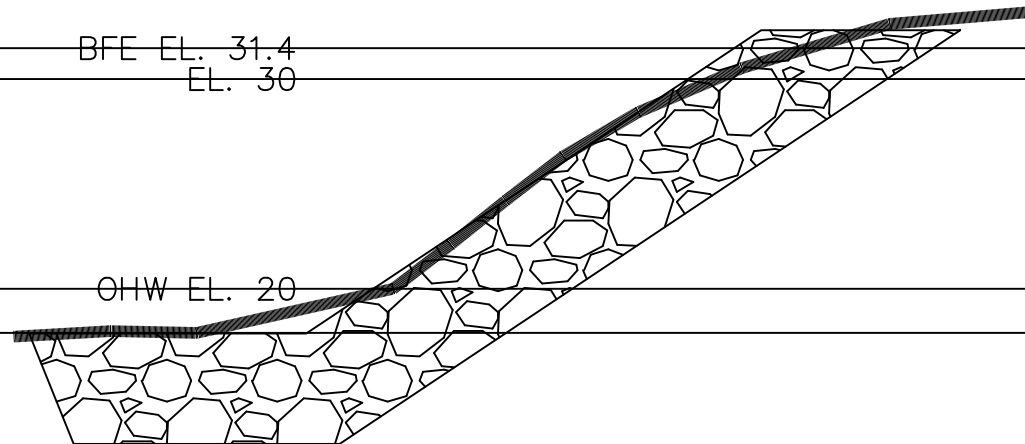


3499 Downstream

Cut area below BFE: 10 s.f.

Fill area below BFE: 9.0 s.f.

Net area below BFE: CUT 1.0 s.f.

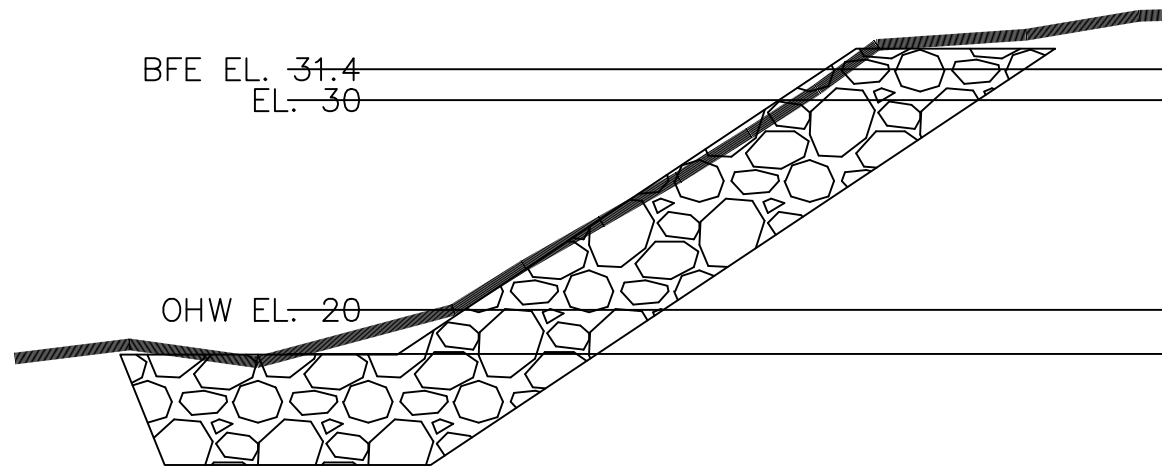


3499 Upstream

Cut area below BFE: 5.0 s.f.

Fill area below BFE: 4.4 s.f.

Net area below BFE: CUT 0.6 s.f.



CBJ - NHN

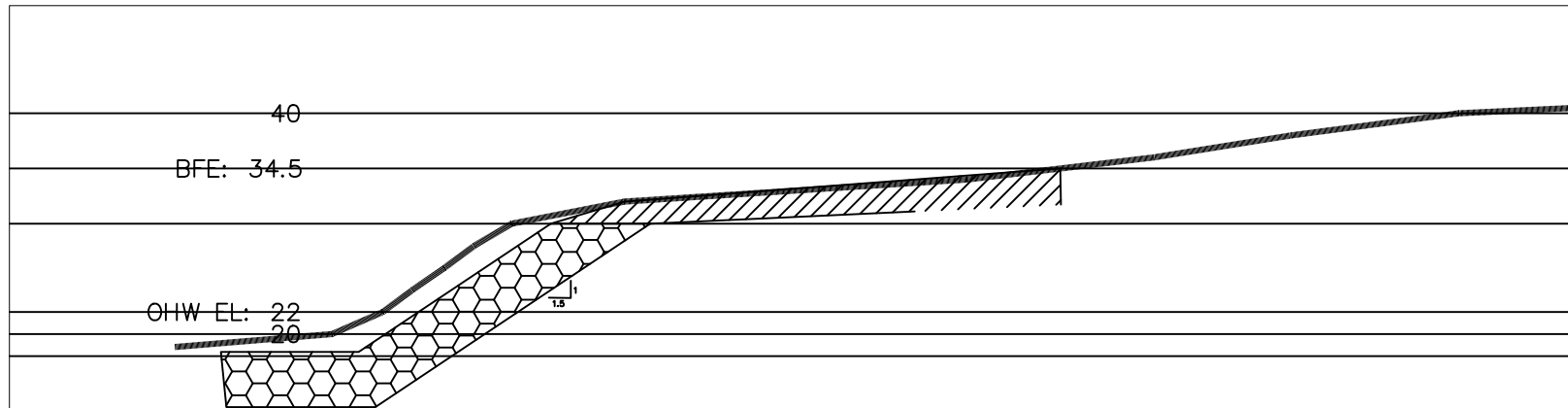
Cut area below BFE: 6.3 s.f.

Fill area below BFE: 4.9

Net area below BFE: CUT +1.4

Bank Armoring 3495 Meander to CBJ (nhn) MeanderWay						
(+)= CUT (-)= FILL						
	l	start area	end area	average	volume (cf)	CY
0 to 3495 D	10.4	0	-3.4	-1.7	-17.68	-0.7
3495 d to u	76	-3.4	3.3	-0.05	-3.8	-0.1
3495u to 3499d	41	3.3	1	2.15	88.15	3.3
3499d to u	52.8	1	0.6	0.8	42.24	1.6
3499u to CBJ	51.2	0.6	1.4	1	51.2	1.9
CBJ to End	10	1.4	0	0.7	7	0.3
					167.1	6.2
6.2 Cubic Yard Cut for N. Meander Armoring						

KILLEWICH ARMORING SECTIONS AND CALCULATIONS

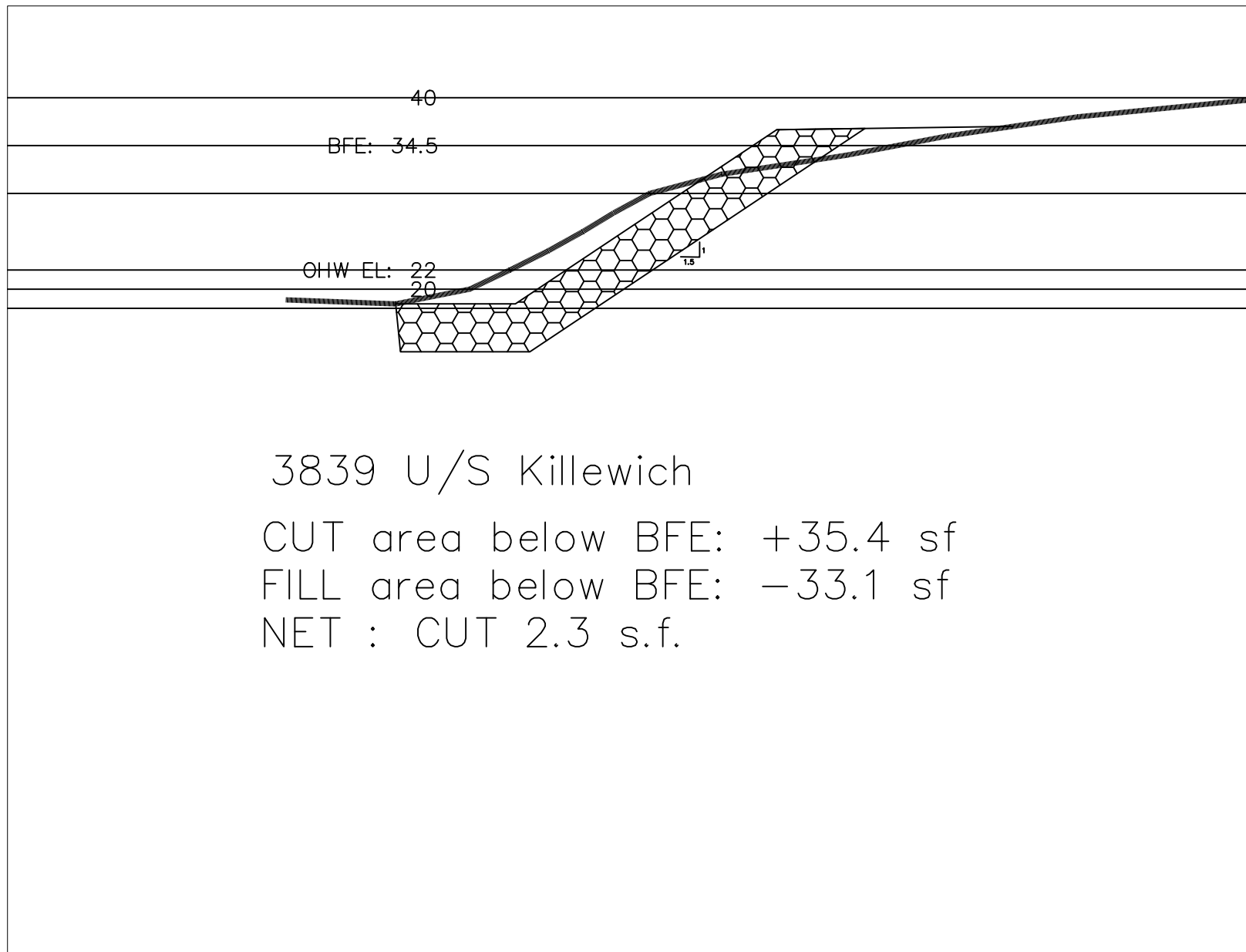


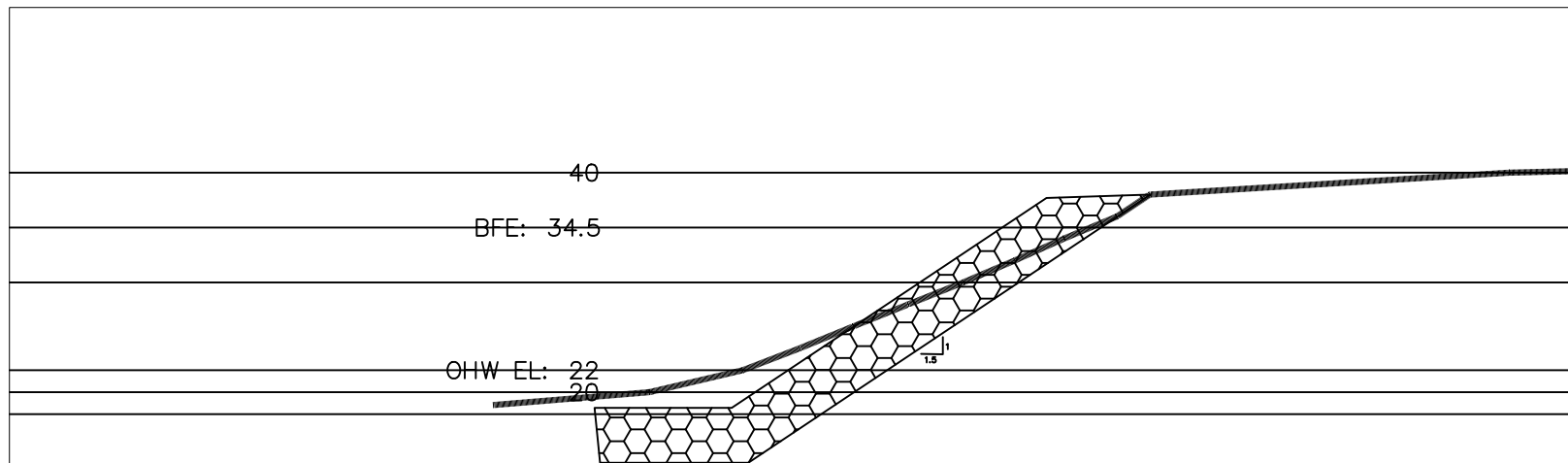
3835 Killewich

CUT area below BFE: +59.0 sf

FILL area below BFE: -0.0 sf

NET: FILL 59 s.f.



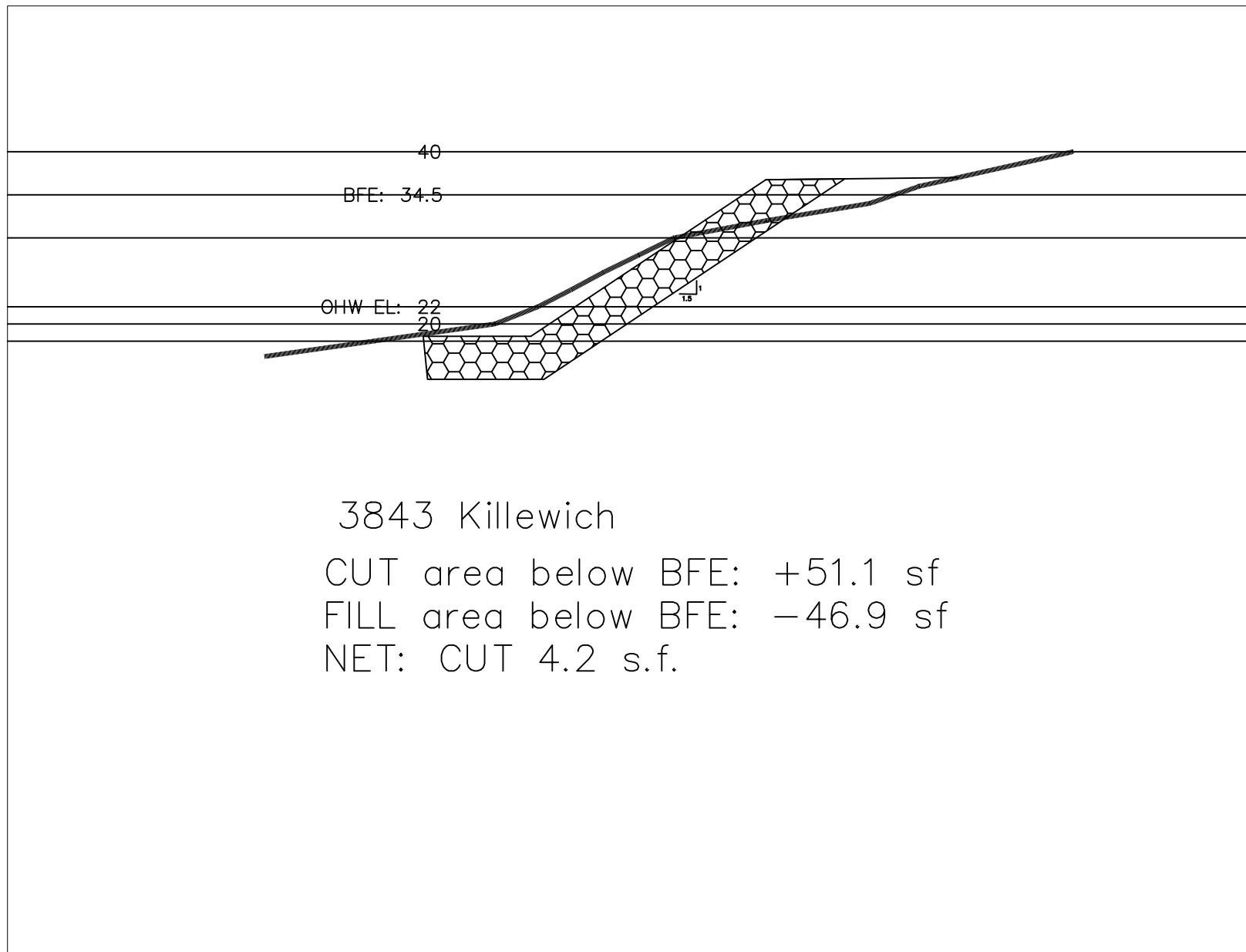


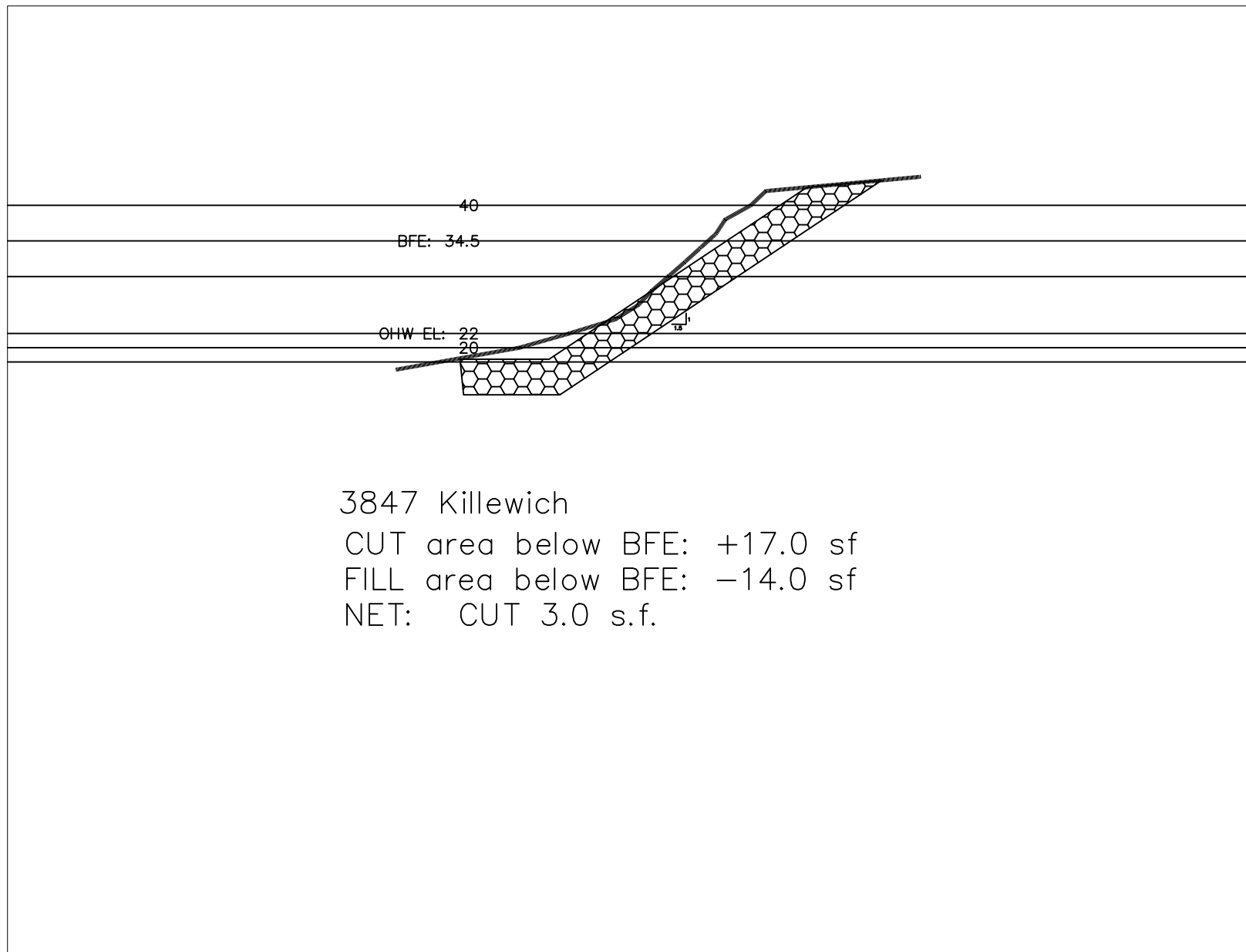
3839 D/S Killewich

CUT area below BFE: +41.9 sf

FILL area below BFE: -37.6 sf

NET: CUT 4.3 s.f.





Bank Armoring 3835 to 3847 Killewich						
(+) = CUT (-) = FILL						
	l	start area	end area	average	volume (cf)	CY
beginning to 3847	61	0	3	1.5	91.5	3.4
3847 to 3843	105	3	4.2	3.6	378	14.0
3843 to 3839 d/s	103	4.2	4.3	4.25	437.75	16.2
3839 d/s to u/s	50	4.3	2.3	3.3	165	6.1
3839 u/s to 3835	137	2.3	59	30.65	4199.05	155.5
3835 to end	45	59	0	29.5	1327.5	49.2
					6598.8	244.4
244 Cubic Yard Cut for Killewich Armoring						

Mendenhall River Preliminary 2D Surface Water Model Report

(204367-MBI-HH-RPT-001)



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Revision History

REV	DATE	COMMENTS	MICHAEL BAKER APPROVAL	CLIENT APPROVAL
A	Feb 28, 2025	Draft	Garrett Yager	
B	Apr 25, 2025	Revise with USGS updates	Garrett Yager	
0	June 06, 2025	Final	Garrett Yager	

EXECUTIVE SUMMARY

This report documents the hydrologic and hydraulic analysis of the Mendenhall River Valley, Juneau, AK, in response to recent Suicide Basin Glacial Lake Outburst Flood (GLOF) events. This study was conducted to support the City and Borough of Juneau and other stakeholder agencies in evaluating current and future potential flood risk within a compressed schedule. To that end, a two-dimensional surface water model was developed using best available data. The surface water model was used to simulate a range of GLOF release events on the Mendenhall River. Hydrographs representing temporarily varied discharge from Suicide Basin, provided by the National Weather Service (NWS), were combined with U.S Geological Survey (USGS) flood frequency estimates to establish a suite of flood event scenarios.

Flood events were simulated to yield whole foot flood stage at the Mendenhall River streamgage near Auke Bay in Mendenhall Lake, managed by the USGS (Gage 15052500) and referenced by NWS (Gauge MNDA2) to provide real-time flood forecasting via the National Water Prediction Service. Inundation maps and depth grids whole foot stage discharge were developed from simulated flood events with the intent of updating current NWS flood forecasting maps.

The surface water model was also used to simulate HESCO barriers along the left (east) bank of the Mendenhall River, from Fireweed Lane to River Court Way. The HESCO barriers are intended to act as a temporary levee that will prevent floodwater from inundating the adjacent community. Simulation results were evaluated to assess the efficacy of HESCO barriers in prohibiting community flooding and possible impacts to previously unaffected community members. Small refinements to the HESCO barrier alignment were made to optimize layout based on model results. Breaches, or failures, in the HESCO barriers were not simulated as part of this study. As simulated, the proposed HESCO barriers prove highly effective in isolating the eastern floodplain from overbank flooding with very little impact to adjacent structures and property. Localized increases in water surface elevation occur within the Mendenhall River and western floodplain. Flooding extents increase most significantly in the undeveloped floodplain, with small increases near existing structures that are likely to be inundated by flooding in the absence of the barrier.

This model is considered preliminary. The model was calibrated to the 2024 GLOF event using high water survey and anecdotal data. The maximum simulated water surface had respective median and mean errors of 0.02 and -0.01 feet, and a standard error of 0.10 feet relative to high water survey. Incorporating supplemental survey and model updates will increase simulation accuracy and certainty.

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Acronyms and Abbreviations

1D	One-Dimensional
2D	Two-Dimensional
AC-FT	Acre-Feet
ADF&G	Alaska Department of Fish and Game
AEP	Annual Exceedance Probability
AKDOT&PF	Alaska Department of Transportation and Public Facilities
ASP	Alaska State Plane
BLE	Base Level Engineering
BN	Bridge Number
CBJ	City and Borough of Juneau, Alaska
CFS	Cubic Feet Per Second
DEM	Digital Elevation Model
DTM	Digital Terrain Model
DGGS	State of Alaska Division of Geological and Geophysical Surveys
FEMA	Federal Emergency Management Agency
FT	Feet
GLOF	Glacial Lake Outburst Flood
H&H	Hydrology and Hydraulics
HEC-RAS	Hydrologic Engineering Center's River Analysis System
LiDAR	Light Detection and Ranging
Michael Baker	Michael Baker International, Inc.
MHHW	Mean Higher-High Water
MLLW	Mean Lower-Low Water
NAD83	North American vertical Datum of 1983
NLCD	National Land Cover Dataset
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service (NOAA)
SfM	Structure from Motion
USACE	U.S. Army Corps of Engineers
UAS	University of Alaska Southeast
UAV	Unmanned Aerial Vehicle
USGS	U.S. Geological Survey
WGS84	World Geographic System 1984
WSE	Water Surface Elevation

1.0 Introduction

The Mendenhall River Valley (the Valley) is the most populated area within the City and Borough of Juneau (CBJ), Alaska. Located approximately 10 miles northwest of Downtown Juneau, it is surrounded by the Tongass National Forest. Within the Valley watershed lies the Mendenhall Glacier, Mendenhall Lake, and Mendenhall River.

Suicide Basin is a side basin of the Mendenhall Glacier located approximately one mile from the Mendenhall Glacier terminus. As Suicide Glacier retreated, the exposed terminus began filling with annual snowmelt, ice melt, and rainfall runoff. Being dammed by the Mendenhall Glacier, the calving face holds back water and sheds icebergs into the lake. In 2009 the first glacial lake outburst flood (GLOF) was recorded, with subsequent GLOFs occurring almost annually. The 2014 GLOF resulted in a peak discharge of 19,900 cubic feet per second (cfs), exceeding the Federal Emergency Management Agency (FEMA) estimated 100-year peak flow of the Mendenhall River of 17,100 cfs. The 100-year discharge, as reported in the 2020 flood insurance study (FEMA 2020), was calculated based on 34 years of historic flood data reported at the USGS-maintained streamgage station (15052500) located in Mendenhall Lake. The data used preceded historic GLOFs.

To provide a better understanding of flood risk within the Valley, the National Weather Service (NWS) completed a flood inundation study of the Mendenhall River (NWS 2016), from which flood inundation maps were developed and made accessible via the web (NWS 2025a). Inundation maps and much of the historical hydrologic data reference the Mendenhall River streamgage (gage) managed by the U.S. Geological Survey (USGS), identified as Gage 15052500, and referenced by NWS as Gage MNDA2.

During August of 2023 and 2024, Suicide Basin GLOFs resulted in subsequently historic peak flooding in the Valley, yielding respective peak discharges of 34,200 cfs and 42,700 cfs, and historic crests of 14.97 feet and 15.99 feet at the Mendenhall River gage. These events resulted in significant erosion and flooding of homes and property. The 2024 GLOF produced a historic crest elevation equivalent to the maximum stage (16 feet) currently mapped by NWS. Both events also resulted in significant morphological changes to the Mendenhall River, influencing flood hydraulics and associated flood inundation.

There is a growing concern that significant flooding equivalent to or greater than the 2024 GLOF will become an annual, or more frequent, occurrence. The affected flood area includes a high number of residential homes as well as critical infrastructure such vehicle roadways, schools and other developed facilities. A better understanding of future potential flooding and how flood waters interacted with the channel and surrounding topography is needed to better inform the community of potential risk and support short- and/or long-term solutions to minimize and prevent flood risk.

1.1 Purpose of Study

The purpose of this study was to develop a preliminary, base level engineering (BLE) two-dimensional (2D) surface water model that can be leveraged to update NWS flood inundation maps and evaluate efficacy of temporary flood fighting and mitigation measures. This study will support multi-agency collaborative action to further document, assess, and mitigate flood risk to community residents, businesses, and critical infrastructure in the Mendenhall River Valley. Given the increasing magnitude and frequency of GLOFs in the Valley, as well as significant changes to the Mendenhall River channel, CBJ plans to position

flood barriers along the east (left) bank of the Mendenhall River as an immediate, short-term countermeasure to future flooding.

1.2 Project Location

The CBJ governs an area of over 2,700 square miles, hosting a population of 32,100 residents (2022 census). It is bordered to the east by British Columbia, Canada, to the north and northwest by Haines Borough, and to the south and southwest by the unincorporated Tongass National Forest. Juneau International Airport is located at the southern extents of the Mendenhall Valley, located northwest of downtown Juneau. The project location covers the Mendenhall Valley, from Mendenhall Lake to the Gastineau Channel (Figure 1-1). The modeled study reach covers the Mendenhall River, from Mendenhall Lake to the Gastineau Channel.



Figure 1-1 Project Location Map

1.3 Overview of Approach

Project scope includes a hydrologic and hydraulic (H&H) analysis of the Mendenhall River Valley to tidewater in relation to Suicide Basin GLOFs, to be performed under a compressed schedule. The H&H analysis was based on best available data collected through multi-agency collaboration and close coordination with CBJ (Michael Baker 2024). To address project needs in the allotted time, a two-dimensional (2D) surface water model was developed using recent, best available topographic data calibrated to the 2024 flood event. Once a reasonably representative hydraulic model was developed for current conditions, predicted flood events were simulated to develop new inundation maps for each incremental whole foot stage elevation at the Mendenhall River gage.

The calibrated model was also used to simulate the proposed Phase 1 HESCO (HESCO) barrier positioned along the left (east) bank of the Mendenhall River, approximately from Fireweed Lane to River Court Way. Simulations with the HESCO in place are intended to assess the efficacy of HESCO barriers in prohibiting community flooding and possible impacts to previously unaffected community members.

2.0 Hydrology

2.1 Watershed Description

The Mendenhall River watershed covers an area of approximately 103 square miles, extending from 7,000 feet elevation in the Tongass National Forest to sea level at the coastal Gastineau Channel. A significant portion of the watershed is covered in glaciers, with much of the lower undeveloped watershed being covered by muskeg and spruce forest. The mountainous terrain and glaciers result in highly variable temperatures and precipitation across the watershed.

The Mendenhall River begins at the receding terminus of the Mendenhall Glacier at the north end of the valley. Mendenhall River drains into Mendenhall Lake, a large glacial moraine lake, which also receives flow from Nugget Creek, Steep Creek, and several small tributaries. Mendenhall River exits the lake near View Drive and flows southward through the valley before draining into the Gastineau Channel and Fritz Cove. Approximately 0.8 miles upstream of Egan Drive (Glacier Highway), Montana Creek enters Mendenhall River from the west.

The Mendenhall Valley is rising relative to sea level. This uplift is a result for both tectonic activity and glacial rebound. As the Valley rises the channel cuts (incises) into the surrounding terrain, reducing and in some cases abandoning adjacent floodplains (Neal and Host 1999) during equivalent flood events. However, this incision has only minimized the potential extent of historic flooding experienced during recent GLOFs.

2.2 Nature of Flood Risk and Historic Flooding

Mean annual precipitation is approximately 50 inches, which includes approximately 86 inches of snow, at Juneau Airport. Mean annual precipitation at the head (top) of the Mendenhall Glacier is estimated to be greater than 20 inches. Maximum annual precipitation typically occurs in the fall months, with increased occurrence and magnitude of regional storms and glacial runoff. Flooding associated with seasonal rainfall runoff and minor GLOF events is generally contained within the banks of the Mendenhall River study reach.

Between 2009 and 2014, the Mendenhall River received floodwater from Suicide Basin GLOFs one to two times per year (NWS 2016). Since then, the NWS has documented one to ten (2015) annual glacial dammed lake releases from Suicide Basin (NWS 2025b). A plot of historic peak annual events (USGS 2025a) and reported GLOF events (NWS 2025b) is shown in Figure 2-1. Not all of the events resulted in flooding, though eight of the last 16 peak annual events were a result of GLOFs, with five of them yielding the top five peak annual events in the 59 year gage record. Recent 2023 and 2024 peak GLOF events yielded the top two historic flood events (Figure 2-2). The 2023 event release was approximately 58% greater discharge than the historic maximum rainfall runoff event, and nearly 48% greater than FEMA's effective 100-year discharge. The 2024 event released 35% greater discharge than the 2023 event, 113% greater discharge than the historic maximum rainfall runoff event, and nearly double (98% greater) FEMA's effective 100-year discharge.

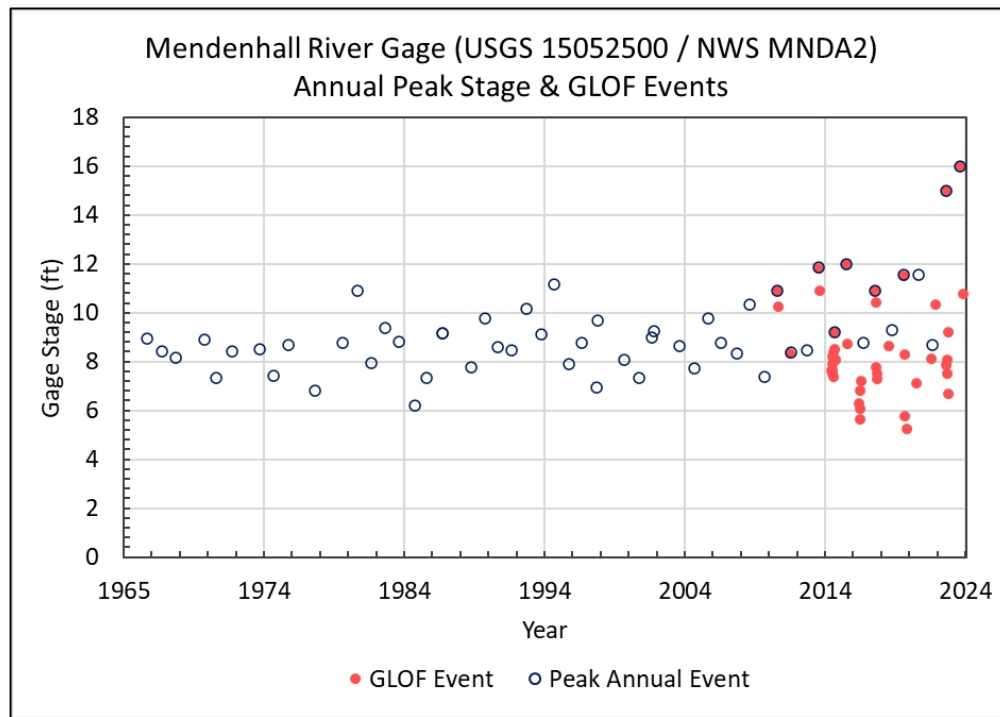


Figure 2-1 Peak annual stage and GLOF event records at the Mendenhall River gage

Prior to installation of the Mendenhall River gage, a large flood occurred in the late summer of 1961, having an estimated peak discharge of 27,000 cfs (Barnwell and Boning 1968). This event was associated with significant reported rainfall, with five inches recorded over a three day period in August. However, the one and three day rainfall recurrence intervals were roughly 2 and 10 years, respectively. This suggests that the 1961 flood may very well have been the result of a GLOF.

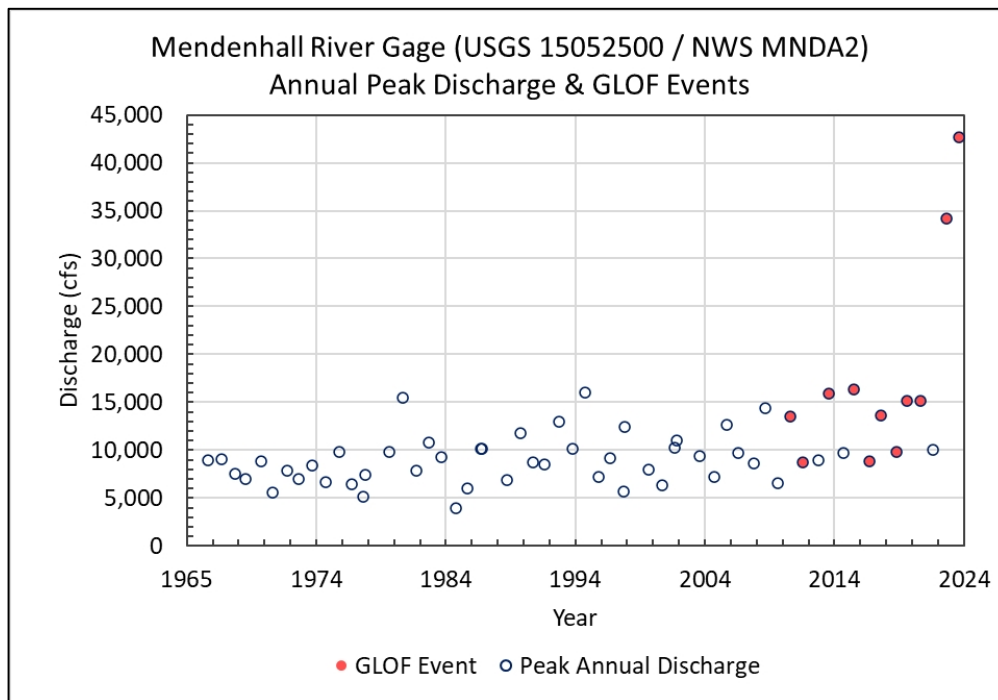


Figure 2-2 Peak annual discharge and GLOF event records at the Mendenhall River gage

Recent 2023 and 2024 GLOFs caused significant flooding upstream of Back Loop Road, impacting both residents and U.S. Forest Service (USFS) facilities, and in the heavily developed eastern floodplain downstream of Back Loop Road. The extent and magnitude of flooding has been well documented by CBJ, USGS, NWS, USACE, and University of Alaska Southeast (UAS) (Michael Baker 2024; NWS 2023, 2024, 2025c). These events also resulted in significant bank erosion, to which several residential buildings were lost. Bridge inspections performed by Alaska Department of Transportation & Public Facilities (ADOT&PF) also revealed substantial channel bed erosion at Back Loop Bridge and the Pedestrian Bridge downstream of the Montana Creek confluence; as much as 6 feet during the 2024 GLOF.

Significant sequential increases in annual flood magnitude associated with GLOF events, and the uncertainty of future events, warrants immediate concern and action by all local stakeholders.

2.3 Study Hydrology

The 2D surface water model relies on manually assigned boundary conditions representing riverine hydrology and downstream control. Inflow hydrology (discharge) for the Mendenhall River and Montana Creek were modeled. The downstream control represents tidewater in the Gastineau Channel and Fritz Cove to which the Mendenhall River drains.

2.3.1 Mendenhall River

Mendenhall River discharge was modeled as an unsteady hydrograph representing the GLOF release volume on top of a constant baseflow that the river may be experiencing prior to and following the GLOF.

Inflow hydrographs were developed using nested Suicide Basin GLOF hydrographs provided by NWS (2025d) and station-based flood frequency estimates published by USGS (Curran 2025).

The NWS-provided GLOF hydrographs were derived using a scaled average of the 2023 and 2024 GLOF hydrographs recorded at the Mendenhall River gage, normalized to a consistent time interval (15 minutes) and removal of baseflow. The average discharge was then computed in cumulative and hourly volumes. Scaling was performed by adjusting the total Suicide Basin release volume in 5,000 acre-feet (ac-ft) increments and distributing the relative runoff volume across the hourly timestep to yield a range of hourly hydrographs representing release volumes from 5,000 to 70,000 ac-ft.

Each of the nested GLOF hydrographs had an additional constant baseflow added to the incremental discharge value equal to the 50% annual exceedance probability (AEP), or 2-year recurrence interval, event. Subsequent baseflow events were then assigned to the 70,000 ac-ft hydrograph to steadily increase baseflow and total peak discharge. Modeled baseflows included the 50, 10, 4, 2, 1, and 0.5% AEP events. These coincide with the 2-, 10-, 25-, 50-, 100-, and 200-year flood recurrence intervals. This approach provided increased peak discharge using probable riverine hydrology without extrapolating GLOF release hydrographs beyond those established by NSW.

The peak discharge of each combined Mendenhall River inflow hydrograph was then compared against the USGS Mendenhall River gage rating curve (USGS 2025b) to identify the associated stage and respective whole foot event for inundation mapping. Only the 70,000 ac-ft GLOF and 4% AEP baseflow produced a combined peak discharge equivalent to a whole foot stage (18FT). Supplemental GLOF hydrographs were developed, while maintaining baseflow, to yield peak discharges associated with whole foot stage elevations from 9 to 20 feet, as requested by CBJ. This required expanding the range of GLOF release volumes and NWS-provided hydrographs, from 1,850 ac-ft to 100,500 ac-ft. It also required extrapolating the USGS rating curve from its upper limit of 18.92 feet to 20 feet. To achieve the 8-foot (8FT) stage, a constant baseflow less than the 50% AEP was modeled. The resulting Mendenhall River inflow hydrographs are plotted in Figure 2-3. Contributing and combined peak discharges for each event are tabulated in Table 2-1. Each event is identified by the associated.

For the 2024 calibration, the discharge hydrograph reported at the Mendenhall River gage (USGS 2025a) was modeled as inflow to the Mendenhall River. Similar data was used for the 2023 event used for model validation.

2.3.2 Montana Creek

Discharge modeled on Montana Creek is intended to serve as a probable contributing flow during a GLOF event, that increases downstream flow on the Mendenhall River and reduces flood storage capacity within the coincident Montana Creek and Mendenhall River floodplain. There is little certainty as to the magnitude or timing of peak discharge on Montana Creek during the GLOF. As such, a steady discharge equivalent to 10% of the Mendenhall River baseflow was applied. This approach is consistent with that used in the 2015 Mendenhall River Inundation Study (NWS 2016). Event-specific discharges are presented in Table 2-1.

For the 2024 and 2023 events, NWS provided the historic gage record on Montana Creek. The record was used to calculate an average flow which varied little during and between events; 105 cfs (2024) and 100 cfs (2023).

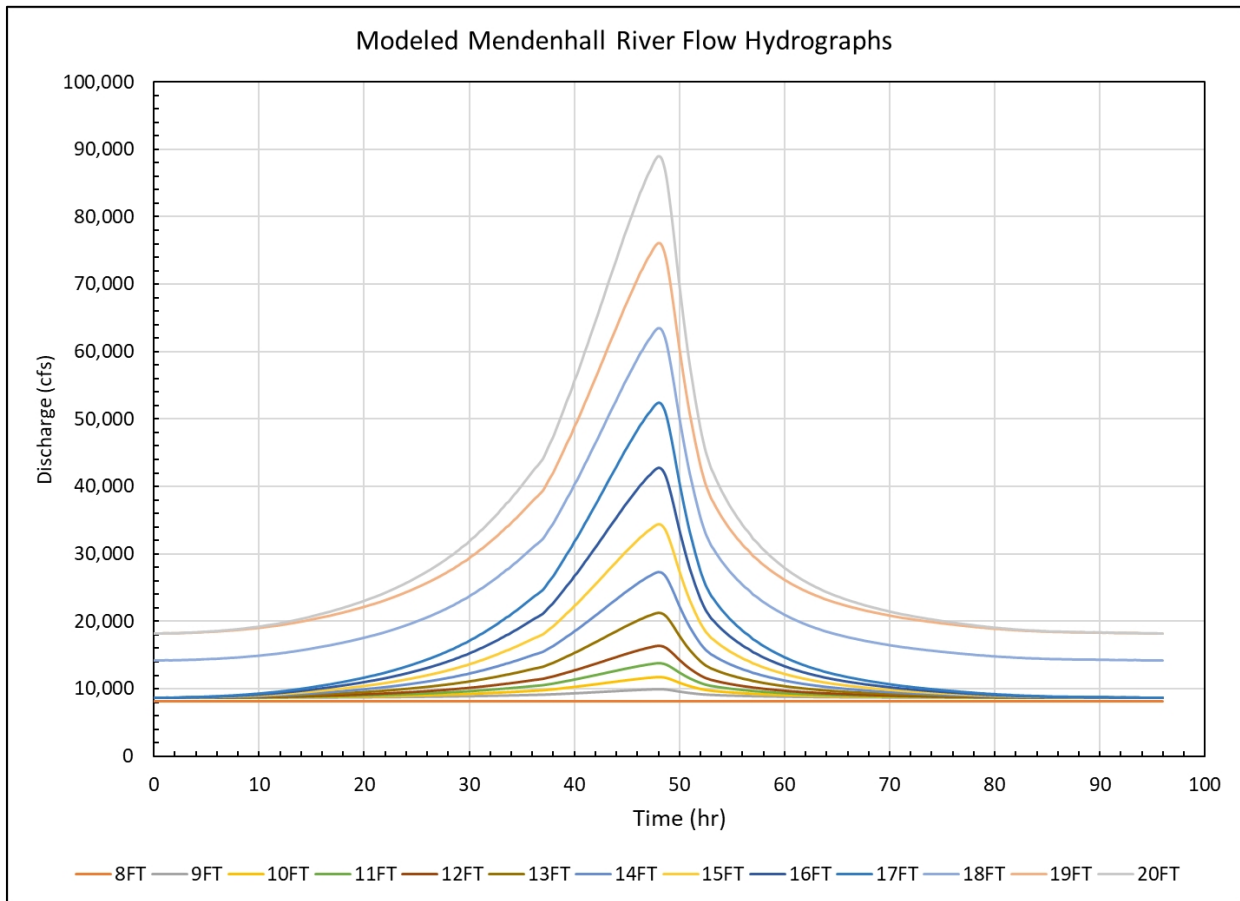


Figure 2-3 Modeled Mendenhall River Inflow Hydrographs for Inundation Events

Table 2-1 Inundation Event Hydrology

EVENT ¹	PEAK DISCHARGE (CFS)		GLOF Maximum Volume (AC-FT)	GLOF Peak Discharge (CFS)	Mendenhall Baseflow Discharge (CFS)	Mendenhall Baseflow AEP
	Mendenhall River ²	Montana Creek ³				
8FT	8,080	808	0	0	8,080	< 50%
9FT	9,923	862	1,850 ⁵	1,303	8,620	50%
10FT	11,706	862	4,380 ⁵	3,086	8,620	50%
11FT	13,798	862	7,350	5,178	8,620	50%
12FT	16,405	862	11,050	7,785	8,620	50%
13FT	21,301	862	18,000	12,681	8,620	50%
14FT	27,289	862	26,000	18,669	8,620	50%
15FT	34,404	862	36,600	25,784	8,620	50%
16FT	42,788	862	48,500	34,168	8,620	50%
17FT	52,369	862	62,100	43,749	8,620	50%
18FT	63,515	1,420	70,000	49,315	14,200	4%
19FT	76,039 ⁴	1,820	82,100 ⁵	57,839	18,200	0.5%
20FT	89,002 ⁴	1,820	100,500 ⁵	70,802	18,200	0.5%
Notes: 1. Modeled event name signifies the whole foot stage associated with peak discharge at USGS Gage 15052500 per 2025 rating curve (USGS 2025a). 2. Mendenhall River peak flow is a combination of GLOF peak discharge and baseflow. 3. Montana Creek flows applied as constant discharge equal to 10% of Mendenhall River baseflow. 4. USGS rating curve extrapolated beyond the 18.92 ft upper limit to establish a peak discharge. 5. GLOF hydrographs developed beyond the NWS-derived limits to achieve whole foot stage.						

2.3.3 Tidewater Control

Downstream control was established as a known water surface elevation. For all predicted events a constant elevation of 20 feet (Mean Lower-Low Water, MLLW) was used. This is a conservative estimate, being approximately 3.7 feet above Mean Higher-High Water(MHHW) and held constant over the entire event. This approach is consistent with that used in the FEMA effective model (FEMA 2020) and the 2015 Mendenhall River Inundation Study (NWS 2016).

For the 2024 and 2023 events, verified tidal records were downloaded from the NOAA tide station 9452210 Juneau, AK webpage (NOAA 2024). The tidal data was modeled as a stage hydrograph boundary condition for the calibration and validation simulations.

All supporting model hydrology data, including raw source data, are provided with the model.

3.0 HEC-RAS 2D Surface Water Model Development

3.1 Background

The 2D surface water model was developed using the latest current Hydrologic Engineering Center's River Analysis System (HEC-RAS, USACE 2024) software, version 6.6. The 2D model simulates hydraulics of unsteady and quasi-steady stated riverine flood flows and tidal elevations. Relative to a one-dimensional (1D) surface water model, use of a 2D model provides greater detail in representing distributary flood flow from the channel into and across the adjacent floodplain. This allows the model to consider topographic features that limit or allow lateral flow to spill from the channel, as well as structures or roads that direct and convey flow through residential and commercial areas, capturing both global and local influences on flooding.

The structure and content of the model meets the typical standards of a 2D BLE Level D model (FEMA 2021) by incorporating hydraulic structures and calibrating to historical data but not including channel bathymetry. The selected level of modeling detail was chosen based on best available data and compressed project schedule. Future model revision is recommended as additional data, specifically bathymetry, becomes available and as channel geometries change with subsequent flood events.

Model extents and mesh detail were selected to reasonably represent flooding in the Mendenhall River Valley from the outlet of Mendenhall Lake to the outfall of the Mendenhall River into the Gastineau Channel. Boundary condition error exists at the terminal limits of the model domain, as with all hydraulic models, limiting model solution confidence to the Mendenhall River reach and lateral floodplains.

3.2 Modeled Scenarios

Two primary conditions were modeled: Existing and Phase 1 HESCO. Each condition was modeled under specific flood events creating a unique model scenario.

Existing conditions were modeled using best available data of the current topographic and hydraulic conditions of the Mendenhall River and adjacent floodplain. This condition best represents hydraulic conditions during the 2024 GLOF. The Existing condition was calibrated to the 2024 GLOF event and validated against the 2023 GLOF event. Each of the 21 flow events discussed in Section 2.3 and Table 2-1 were modeled using the calibrated Existing condition. Resulting flow conditions associated with whole foot stage at the Mendenhall River gage were used to generate inundation and depth grid maps.

The Phase 1 HESCO (HESCO) condition represents Existing conditions with the inclusion of HESCO barriers positioned along the left (east) bank of the Mendenhall River, approximately from Fireweed Lane to River Court Way. The HESCO condition is intended to assess the efficacy of HESCO barriers in prohibiting community flooding and possible impacts to previously unaffected community members. The 1% AEP (100-year), 2024 GLOF, 45K+50% and 65K+50% flow events were modeled using the HESCO condition. Inundation and depth grid maps were developed for the 45K+50% and 65K+50% flow events.

3.3 Topographic Base Map

The 2D model sources several terrain files of varying resolution and dates of capture. The best available local data was used to composite a topographic basemap referenced by the model. Five unique terrain files were used to generate the composite surface:

October 2024 Draft LiDAR DTM: The most recent survey, covering most of the project area, was collected and processed by Elevate UAS for AKDOT&PF. The light detection and ranging (LiDAR) survey was collected on October 21, 2024, during a declining river discharge of 4,500 to 2,800 cfs. Additional LiDAR was captured through most of the Mendenhall River corridor on October 31 and November 1 during lower flow, however this data had not been processed as part of the provided draft digital terrain model (DTM). The draft DTM has a resolution of 1-foot. A final digital terrain model (DTM) including the later river corridor survey was provided but was not included in the model due to time constraints. This terrain surface served as the primary terrain source, to be supplemented as data was available and required.

October 2024 DOWL UAV Survey: Survey of the Mendenhall River corridor was collected from the approximate outfall of Mendenhall Lake to approximately 500 feet downstream of Egan Drive. Data was collected on October 3 and 4, 2024 by DOWL using an unmanned aerial vehicle (UAV) during a declining discharge of 920 to 680 cfs. Photogrammetric data was processed using structure from motion (SfM). The terrain surface was provided in a drawing file format (.dwg) and was exported to a 1-foot resolution .tif file for further processing. This terrain served to enhance channel topography below the October 2024 Draft LiDAR DTM water surface.

2021 Mendenhall Lake Bathymetry: Lake bathymetry collected by PND for the U.S. Forest Service on May 23, 2021. Elevations were derived from measured depths referenced to a water surface elevation measured at USGS gage 15052500. This 1-meter resolution terrain served to provide bathymetry below the October 2024 Draft LiDAR DTM water surface.

Juneau 2013 LiDAR DEM: The most recent terrain data currently available via the State of Alaska Division of Geological and Geophysical Surveys (DGGs 2024). The 1-meter resolution digital elevation model (DEM), captured in April 2013, was downloaded from the DGGs portal on November 14, 2024. This terrain served to expand the lateral extents of the October 2024 Draft LiDAR DTM, predominantly to include the coastal Gastineau Channel.

No bathymetric data of the current channel is available outside of bridge soundings collected by ADOT&PF at the Back Loop Road Bridge (Bridge Number (BN) 0217), Pedestrian Bridge (BN 1904), and Egan Drive Brotherhood Bridge (BN 0737). Soundings suggest approximately 6.0 to 6.5 feet of thalweg scour occurred at the Back Loop Bridge, 6.3 feet of thalweg scour occurred at the Pedestrian Bridge, and little measured thalweg scour occurred at the Brotherhood Bridge during the August 2024 GLOF. Local enhanced bridge hydraulics often result in greater scour and deeper channels than unbridged channels. Given the nature of localized hydraulics, bridge spacing, and variability in channel shape and slope between bridges, interpolating a bathymetric surface from bridge soundings was deemed questionable and unnecessary during the preliminary model calibration. Prior studies (NWS 2016 and FEMA 2020) do include bathymetry and were evaluated against the topographic base map; this data was not adopted given the magnitude of channel bed change in response to 2023 and 2024 flooding.

Building footprints were also included in the topographic map. Further discussion of supporting data and processing of the building raster are discussed below (Section 3.3.3).

3.3.1 Vertical Datum

The vertical datum used was MLLW (NTDE 83-01) based on two NOAA benchmarks for tide station "9452210, Juneau, Gastineau Channel, Stephens Pass, AK". This is the same vertical datum used by past studies and relevant survey, including LiDAR, UAV, bathymetry, and high water mark surveys. As part of the 2015 Mendenhall River Flood Inundation Study (NWS 2016), USGS gage 15052500 was surveyed to

this datum. Add 55.99 feet to convert the reported river gage stage (e.g. 16 feet) to the project datum (e.g. 71.99 feet MLLW).

3.3.2 Horizontal Coordinate System

The project used the Alaska State Plane (ASP) Zone 1 projection in feet based off the North American Datum of 1983 (NAD83). All model input data were projected into the spatial reference shown in Figure 3-1.

```
PROJCS["NAD_1983_2011_StatePlane_Alaska_1_FIPS_5001_Feet",GEOGCS
["GCS_NAD_1983_2011",DATUM["D_NAD_1983_2011",SPHEROID
["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT
["Degree",0.0174532925199433]],PROJECTION
["Hotine_Oblique_Mercator_Azimuth_Natural_Origin"],PARAMETER
["False_Easting",16404166.666666666],PARAMETER["False_Northing",-16404166.666666666],PARAMETER
["Scale_Factor",0.9999],PARAMETER["Azimuth",-36.86989764583333],PARAMETER["Longitude_Of_Center",-
133.6666666666667],PARAMETER["Latitude_Of_Center",57.0],UNIT["Foot_US",0.3048006096012192]]
```

Figure 3-1 Project Horizontal Datum Parameters

3.3.3 Terrain Processing

Terrain sources were evaluated for accuracy and preference of use prior to developing the existing conditions topographic base map. Due to spatial transformation limitations in RAS Mapper, all raster terrain data was reprojected into the World Geographic System 1984 (WGS 84), prior to creating the topographic base map in RAS Mapper. Original raster resolution was maintained and the WGS 84 projected raster was snapped to the native raster.

The October 2024 Draft LiDAR (2024 LiDAR) surface was identified as the primary base surface for terrain processing. To enhance channel geometry below the LiDAR-captured water surface, the October 2024 DOWL UAV (2024 UAV) terrain was adopted. A manually derived masking polygon was digitized along the edge of water using aerial imagery, hillshade terrain symbology, and contours. Within this polygon, the 2024 UAV surface was burned into the 2024 LiDAR. Similarly, the 2021 Mendenhall Lake Bathymetry was burned into the 2024 LiDAR over the full extent of the 2021 surface. The 1-meter resolution bathymetry was resampled to the 1-foot resolution of the 2024 LiDAR. Composite terrains were snapped to 2024 LiDAR to maintain the original terrain outside the limits of terrain burning. The composite surface was reprojected to the WGS 84 projection. The resulting terrain surface, 2024DOT_2024UAV_2021USFS_WGS84.tif was referenced as one of three surfaces in RAS Mapper to develop the model terrain.

The second surface was developed to represent buildings in the model terrain. Building footprints were downloaded from the Microsoft US Building Footprints GitHub link for Alaska (Microsoft 2024). Building polygons were reviewed against recent aerial imagery and the State of Alaska 911 Address Database (Alaska 2024) point file. Building footprints were removed where no structure was visible in aerial imagery and/or 911 point was missing. Building footprints were added where a 911 point was coincident with a structure in aerial imagery. A large number of the original building footprint features were manually adjusted where structures were poorly represented, likely due to image quality and the algorithm used to automatically generate original footprints. The footprints were then converted to a 1-foot resolution raster layer snapped to the 2024 LiDAR and assigned elevations 10 feet above the 2024 LiDAR. The resulting building surface, reprojected to the WGS 84 projection (Buildings_WGS84.tif), was referenced as the second of three surfaces in RAS Mapper.

The Juneau 2013 LiDAR was clipped to cover an area beyond the extents of hydraulic modeling, snapping the resulting terrain file to the original. Elevations, provided in meters, were converted to feet and the surface was reprojected to WGS84. The resulting 3-meter resolution raster (dtm_1m_Block7_masked_lp_FT_WGS84.tif) was referenced as third and final surface in RAS Mapper.

When developing the new terrain layer in RAS Mapper the three layers were not merged to a single raster and no vertical conversion was applied.

3.4 Hydraulic Inputs

Certain features and topographic characteristics influence the extent and magnitude of flooding within the model domain. The following describes the hydraulic inputs used to capture these influences within the model.

3.4.1 Hydraulic Control Features

Roadway spatial data provided by CBJ were leveraged to produce the initial hydraulic control feature dataset, or breaklines, for the 2D model. These datasets were reviewed and manually modified against the topographic basemap and aerial imagery. Unnecessary roads, such as those outside of maximum inundation extents, those having little no hydraulic control, or adding unnecessary complexity to the model, were removed from the final breakline layer.

Additional breaklines were added to high ground topographic breaks that could contain and/or direct floodwater, including but not limited to ridges, berms, and buildings. Breaklines were also delineated to represent channels and bounds of dominant conveyance corridors.

3.4.2 Buildings

Building footprints were incorporated into the topographic base map as discussed in Section 3.3.3.

3.4.3 Hydraulic Structures

Bridges on the Mendenhall River were modeled using SA/2D Connections and bridge geometries captured in ADOT&PF as-built plans and bridge sounding workbooks. Known culverts conveying channelized flow across roads were modeled using terrain modifications to provide hydraulic connectivity across the roads. In the absence of available data, the pedestrian bridge over Montana Creek was not modeled. Further discussion of hydraulic structure modeling is presented in sections 3.5.5 and 3.5.6.

3.4.4 Roughness coefficients

Polygons representing land cover classes were developed using aerial imagery, ground imagery, terrain, roadway spatial data, and the 2016 National Land Cover Dataset (NLCD). The 2016 NLCD data was deemed too coarse for use in the model, though associated land cover classes were referenced for assignment in the digitized land cover layer. Roadway polylines were buffered into polygons, which were cleaned and manipulated based on terrain and aerial imagery to represent roads. Additional paved, gravel, and turf areas with lower Manning's roughness values were manually delineated. The Mendenhall River was separated into four unique polygons, largely dictated by regions of homogenous channel slope captured in the terrain. These areas are roughly consistent with Manning's roughness regions used in the 2015 Flood Inundation Study (NWS 2016). Initial Manning's roughness coefficients were assigned based on past

studies and industry references. Roughness coefficients were adjusted as part of model calibration and sensitivity testing (Section 3.9).

Table 3-1 Material Types and Associated Manning Coefficient Values

LAND COVER CLASS (MATERIAL TYPE)	MANNING COEFFICIENT
Roads	0.02
Paved_Gravel_Turf	0.02
Mend_Lake	0.02
Mend_Lake_Outlet	0.048
Mendenhall River	0.03 – 0.06
Coastal_WB	0.024
Tidal_Marsh	0.035
Montana_Cr	0.05
Lakes_Ponds	0.03
Detention_Pond	0.045
Drainage_Ch	0.045
Developed_Residential	0.065
Developed_Woodland_Residential	0.12
Developed_Mixed	0.065
Woodland	0.15
Upland	0.05
Riprap	0.045
Open_Space	0.035
Shrub_Scrub	0.05

3.5 Mesh Generation

Three mesh geometries were developed having the same domain extents. The *Existing* conditions mesh geometry was developed to represent existing conditions within the Valley. The *Proposed_HESCO* conditions mesh geometry was developed to simulate the HESCO barrier in place. This allowed a breakline to be used to orient cell faces along the crest of the proposed HESCO barrier. It also allowed a separate terrain, modified to include elevated ground along the proposed HESCO alignment, to be associated with the *Proposed_HESCO* geometry (Section 3.7). To eliminate computational differences due to mesh variation when comparing existing and proposed HESCO conditions, a third geometry was developed. This geometry, identified as *Existing_woHESCO*, is a duplicate of the *Proposed_HESCO* geometry that is associated with the existing conditions terrain. Evaluating the direct impacts of the HESCO is achieved by comp

aring the *Proposed_HESCO* and *Existing_woHESCO* solutions, without introducing computational differences due to mesh structure.

3.5.1 Domain Extents

The model domain encompasses the entire Mendenhall River Valley, as presented in Figure 3-2. The upstream limit is located near the northern terminus of Glacier Spur Road, at a topographic constriction of Mendenhall Lake. The model does not extend to the current toe of the Mendenhall River Glacier, which will continue to retreat north. The downstream limit bisects the Gastineau Channel east of Juneau International Airport and the southwest terminus of the Gastineau Channel as it enters Fritz Cove. The model extends east and west to the topographic confines of the Mendenhall River Valley.



Figure 3-2 Mendenhall River (blue) study area and modeling extents

3.5.2 General Mesh Description

The modeled mesh geometries cover an area of approximately 14.5 square miles, consisting of approximately 120,000 cells. The nominal quadrilateral cell size is set to 50 feet.

3.5.3 Breaklines

The mesh was refined through the enforcement of breaklines, used to align cell faces (where the conveyance calculations occur) at key hydraulic influences. These include high ground, such as roadways, berms and natural ridges. Breaklines were also used to ensure cell faces captured the blockage of flow by buildings in critical locations, typically adjacent to the Mendenhall River. Manually delineated breaklines were also used to represent the stream network, generally aligning cell faces perpendicular to flow and refine the mesh along the stream corridors. For the With and Without HESCO geometries a breakline was assigned to the crest of the HESCO barrier. Final breaklines were enhanced with manual delineations. In places where the breaklines intersect, preference was given to the feature having the most hydraulic influence. Cell spacing around the breaklines is equal to the nominal cell size. In general, the following guidelines were followed:

- Breaklines aligned with or spanning Mendenhall River and Montana Creek were assigned a near spacing of 50 feet.
- Breaklines representing the Mendenhall River were assigned a near repeat of two to yield a total span of six cells, ensuring a minimum of two cells across the channel and capture of the adjacent banks.
- Additional breaklines were assigned along channel banks to capture localized elevated ground.

3.5.4 Refinement Regions

Refinement regions were used near the upstream and downstream limits of the model to increase nominal cell size to 100 feet. This yields a reduction in total cell count and computational instability without limiting solution accuracy.

3.5.5 SA/2D Connections

SA/2D connections were utilized to define hydraulic structures spanning the Mendenhall River; Back Loop Road Bridge (BN 0217), Pedestrian Bridge (BN 1904), and Egan Drive Brotherhood Bridge (BN 0737). Bridge geometries were entered using the Connection Data Editor, including bridge deck and piers. Bridge geometries are based on a review of as-built drawings, bridge inspection soundings, and geometries used in the 2015 Flood Inundation Study model (NOAA 2016). Cross section profiles were cut from the model terrain. The highest energy answer of standard step and momentum were used for low flow methods, while pressure and/or weir was selected as the high flow method. Hydraulic table parameters were selected to provide sufficient information without unnecessary detail covering the full range of modeled discharge. The resulting 1D family of rating curves were reviewed for anomalies.

3.5.6 Hydraulic Structures

Aside from the three bridges represented by SA/2D connections, no hydraulic structures were directly modeled within the HEC-RAS model. Hydroconnectors were used to approximate culvert openings through roadway embankments spanning dominant floodplain channels. Lines were drawn to represent

the structure and the openings were estimated as vertical walled slots based on available data. Opening widths were assigned based on attributed geospatial culvert data obtained from CBJ (2024) and Alaska Department of Fish and Game (ADF&G) fish passage survey reports (2024). Invert elevations were assigned from the modeled terrain. The hydroconnectors were burned into the DEM using RAS Mapper Terrain Modifications.

Mendenhall Valley's stormwater network was not included in this model, beyond major roadway culverts described above, as is typical of BLE models. Overbank floodwater conveyance via the stormwater network does occur but is not represented in simulated flood conditions.

3.5.7 Initial Condition Points

Initial condition points were used to represent the starting water surface elevation in Mendenhall Lake, downstream of Back Loop Road, and in Gastineau Channel. Initial condition points were used to 'fill' the Mendenhall River prior to model simulation to avoid losing significant runoff volume and initial model instability. Initial condition points were only referenced for calibration and validation simulations, as well as base flow simulations. All other modeled events referenced the final steady state solution for the respective base flow condition.

3.5.8 Reference Points

Reference points were used to represent the survey high water marks collected after the 20204 GLOF. Surveyed elevations were assigned to each of 22 unique reference points, which are plotted against the simulated stage hydrograph at each point providing a direct comparison of modeled and observed water surface elevations. High water mark survey was conducted by USACE. All high water mark survey data has been included with the model.

3.5.9 Manning's Roughness

The derived land cover polygons were input to RAS Mapper to generate a Land Cover layer with assigned roughness values. This layer was associated with the Existing and HESCO mesh geometries. The spatially Varied Manning's n on Faces option was selected to allow HEC-RAS to vary Manning's n values across cell each cell face. Manning's n values were manually adjusted in the Land Cover layer during model calibration; no calibration regions were used.

3.6 Boundary Conditions

External boundary condition lines were drawn to account for upstream inflow to Mendenhall Lake and downstream tidal stage. The lines were drawn roughly perpendicular to flow and covered the extent of flooding. An internal boundary condition line was used to assign baseflow along Montana Creek upstream of the Mendenhall River confluence.

3.6.1 Inflow

Inflow to Mendenhall Lake was assigned an unsteady flow hydrograph as discussed in Section 2.3. A quasi-steady flow hydrograph was assigned to Montana Creek equal to the baseflow discussed in Section 2.3. Modeled peak inflows are presented in Table 2-1.

3.6.2 Downstream

The downstream boundary condition was assigned a stage hydrograph, which was either unsteady for model calibration and validation or quasi-steady for all other model scenarios. Unsteady stage hydrographs were based on NOAA tide gage data reported for Juneau, AK Station 9452210 for the simulation period of interest. Quasi-steady stage hydrographs were assigned a value of +20 feet (MLLW). This is the same values used in the effective Flood Insurance Study (FEMA 2020) and the 2015 Flood Inundation Study (NWS 2016).

3.7 Terrain Modifications

Terrain modifications were used to recondition the Terrain Base Map to represent hydroconnectors across roadways, correct terrain errors, and approximate channel bathymetry at the Mendenhall Lake outlet. A terrain modification was also used to represent the current proposed HESCO barrier.

Hydroconnectors approximate conveyance conditions of culverts, allowing backwater to build and flow to pass high ground features. The dimensions of the terrain modification were defined to reflect those of the hydraulic connection (i.e., the diameter of a culvert). The placement of terrain modifications was based on available terrain and spatial data, as well as aerial imagery.

The 2024 UAS and LiDAR DEMs did not accurately capture pedestrian paths under the Egan Dr. Brotherhood Bridge, adjacent to each abutment. Inclusion of these paths increases bridge conveyance area at flood elevations exceeding top of bank elevations. Terrain modification dimensions were defined to reflect connectivity between upstream and downstream ground elevations, supported by terrain data and aerial imagery.

The absence of bathymetry at the Mendenhall Lake outlet has a direct influence on both lake stage and total downstream flood volume. Channel bathymetry was approximated by a trapezoidal channel with bounding thalweg elevations defined by available lake bathymetry and 2024 UAS elevations upstream of Back Loop Road Bridge. Slope breaks between terminal points approximate those captured in terrain data, supported by aerial imagery and general channel planform (i.e., steeper slope through contracted section at end of View Drive).

An elevated rectangular terrain feature was added along the proposed HESCO barrier alignment. The proposed alignment was offset 5 feet landward to represent the HESCO centerline. Underlying terrain was elevated 30 feet to ensure floodwater containment riverward of the barrier. A top width of 10 feet was assumed, locating the riverward face of the modeled barrier coincident with the proposed alignment. Additional, barrier footprint width will extend landward of the modeled barrier having no influence on channel conveyance. Failures, or breaches, in the HESCO barrier were not modeled as part of this study.

3.8 Simulation Parameters (Model Control)

3.8.1 Equation Set

The Diffusion Wave equation set was selected to expedite model calibration and simulation times to meet the compressed schedule. Sensitivity tests were performed using the available full momentum equations. Relative differences in modeled maximum water surface elevations varied little across the different equations set solutions. Water surface elevations did differ between equation sets but initial testing

indicates calibration adjustments could achieve historical observed data of comparable accuracy using full momentum to those obtained using the Diffusion Wave equation set.

3.8.2 Initial Conditions

An initial condition time of 6 hours, with a ramp up fraction of 1.0, was used for the 2024 calibration and 2023 validation simulations. This allowed the model to run the 2D computations for the 2D flow area by slowly transitioning the initial WSE from zero to their initial values in the simulated hydrograph. This allowed the model to stabilize to initial condition throughout the extent of the model domain. All other simulation events used the default initial condition time of 1 hour with a ramp up fraction of 0.1.

3.8.3 Simulation Period

The simulation period was a function of the modeled flow hydrograph. At a minimum, simulation periods were set to capture the storm peak at the basin outlet. Calibration and validation simulations were modeled over a period of 120 hours and 96 hours, respectively, centered around peak flow recorded at the Mendenhall River gage. Base flow simulations were modeled for a period of 48 hours to ensure steady state condition were achieved. Inundation events were modeled over a period of 96 hours.

The computation interval was controlled by the Courant Number, which allows the model to choose the optimal time step to resolve instabilities in the model. The hydrograph and detailed output interval were set to 15 minutes to match the shortest interval of historical gage data.

3.9 Calibration and Validation

There is currently one active streamgage on the Mendenhall River that can be used for calibration/validation: USGS Gage 15052500 (NWS Gage MNDA2). The gage, located along the north shore of Mendenhall Lake, was used as just one point of model calibration/validation. Simulated water surface elevations have a greater potential of being impacted by modeled boundary condition error and uncertainties associated with assumed bathymetry at the Mendenhall Lake outlet. Therefore, additional data was referenced with equivalent weight.

High water mark survey data collected by USACE following the 2024 calibration and 2023 validation events was also referenced, as was anecdotal information including resident interviews, aerial and ground imagery, and summary reports released by NWS. A reasonable amount of uncertainty should be applied to each observation: high water marks can be effected by wave action or local variations in hydraulic conveyance not captured in the model; public reports can be influenced by errors in perception or recollection as well as the timing of observed conditions relative to peak; timing of imagery, aerial or ground, may not be coincident with peak flood conditions.

Validation against past modeling studies was not performed given the significant amount of channel erosion that has been documented in terrain and bridge bathymetry.

Calibration and validation were performed prior to simulating inundation events.

3.9.1 Convergence metrics

The purpose of this study was to develop a preliminary, BLE 2D surface water model that can be leveraged to update flood inundation maps and evaluate efficacy of temporary flood fighting/mitigation measures.

With this purpose in mind, model convergence was identified as an acceptable ‘collective’ convergence of peak observed and simulated water surface elevations across the model. No one observed dataset was assigned greater weight than another, however the timing of documented observations was considered (e.g. image or video capture relative to peak flooding).

3.9.2 Model Adjustments

To best match calibration event stage, global Manning’s n values were adjusted within the Land Cover map layer. Calibration regions were initially used but did not yield any appreciable advantage to model calibration. Division of the Mendenhall River into individual reaches with a unique assigned Manning’s n did serve as relative calibration regions.

Another adjustment was the inclusion and modeled geometry of assumed bathymetry at the Mendenhall Lake outlet. This model adjustment served to prohibit excess stage in Mendenhall Lake, driven by limited outlet conveyance.

3.9.3 Calibration Results

Several regions were referenced during model calibration, dictated by available data. A general description of calibration results is presented below by region, progressing north to south. Detailed calibration data are provided with the model.

USGS/NWS gage: Simulated peak flood stage was 0.11 feet above reported peak stage.

Skater’s Cabin Road: Simulated peak flood stage was 0.01 to 0.08 feet above reported peak stage at three high water survey points, with an average error of 0.05 feet. The simulated peak stage was consistent across all three points.

View Drive: Simulated peak stage varied from 1.2 feet above to 0.55 feet below reported peak stage. The average error at the seven high water marks is 0.05 feet. Despite repeated efforts to adjust Manning’s roughness values, which included the addition of the Developed Woodland Residential land cover classification, and the inclusion of outlet bathymetry, calibration in this region was difficult. There is some uncertainty associated with high water marks, as evidenced by the range of error within a relatively small hydraulically connected area. This area likely experiences considerable bedform and conveyance capacity change during a large flood event which cannot be modeled with the static terrain.

Marion Drive: Public outreach interviews and local imagery provide anecdotal flood data along Marrior Drive. Generally, simulated inundation extents compare well with resident reports. Reported flood depths, which are highly subjective, were generally consistent with or slightly greater than simulated peak flood depths. Simulated flood extents are greater than observed, particularly along Fireweed Lane. This was deemed an accepted tradeoff to achieve sufficient overbank flooding at the intersection of Killewich Drive and Riverside Drive.

Killewich Drive: Three high water survey points were collected near the Killewich Drive Region, which includes two points along North Riverside Drive. Simulated peak stage was -0.80 to -0.56 feet below survey. Reasonable adjustments to Manning’s n values could not achieve high water survey elevations. When maximizing Manning’s n values to best achieve survey, simulated flood stages were carried across the floodplain to downstream regions of Meander Way and Riverside Drive. To better understand flooding and support calibration, resident reports and drone imagery were referenced. Seventeen resident reports

along Killewich Drive and Betty Court suggest flood extents are reasonably represented by simulated peak flooding, referencing distance from edge of riverbank, building pad, or home/deck. This was supported by aerial drone imagery captured during the 2024 GLOF. However, drone imagery and resident accounts indicate slightly less floodwater along the north end of Killewich Drive, but near equivalent flood extents near the south end of Killewich. Reported flood depths adjacent to homes were generally equivalent to simulated depths. Reported flood depth behind 3875 Killewich was 2 feet, with simulated depths ranging from 2.5 feet near the river to 1.6 foot near the home. Increasing simulated flood depth increased deviation of observed and simulated flood stage further south in the Valley. The need to balance negative and positive calibration error across the Vally became most evident in this and southern regions.

Meander Way: Four high water points were collected along and adjacent to Meander Way, including Turn Street, Parkview Court, and Center Court. At the northern terminus of Meander Way simulated peak stage was 0.20 feet higher than survey. Progressing south the simulated depths we 0.34 feet higher at Turn Street, 0.15 feet higher at Parkview Court, and 0.02 higher at Center Court. Anecdotal information suggests above bank depths increasing from 2 to 4 feet around the northern terminus of Meander Way, with simulated depths following a similar range of values. Simulated inundation extents in this area are nearly equivalent to or slightly exceed those documented in aerial drone imagery captured at approximately the same time as the simulated peak stage and presumably peak observed stage.

South Riverside Drive: Four survey points fall within this area. Two points along Rivercourt Way had simulated peak stage that was -0.31 and -0.13 feet lower than survey. On Riverside Drive near Mendenhall Valley Public Library the model simulated a peak stage that was approximately 0.52 to 0.57 feet higher than observed. Modeled inundation of Dimond Park, south of the library, was not evident in aerial drone imagery.

Egan Drive (Glacier Highway) / Brotherhood Bridge: A single highwater mark just downstream of the bridge is the southern-most calibration data point. The simulated peak stage was -0.07 feet lower than survey.

Across all 22 high water survey points, the simulated peak stage had a median error of 0.02 feet, a mean error of -0.01 feet, with a range of -0.8 and +1.2 feet, and a standard error of 0.10 feet.

3.9.4 Validation Results

The 2023 GLOF was modeled as a coarse validation of the 2D model. Changes in channel morphology during the 2024 GLOF, as captured in the modeled topographic base map, prohibits accurate modeling of the 2023 GLOF. This is evident in the difference between simulated peak stage and high water data collected by NWS survey following the 2023 event. Survey points were thinned to eliminate points of poor quality or inconsistent elevations at coincident locations.

The most significant differences occur along the south side of View Drive, where the simulated peak stage was approximately -2.73 to -4.80 feet lower than observed survey. This likely attributable to the approximate 6.0 to 6.5 feet of vertical scour recorded at Back Loop Bridge.

Downstream of Back Loop Bridge, the remaining 19 high water survey points had a median error of 0.36 feet, a mean error of 0.41 feet, with a range of -0.67 and +1.48 feet, and a standard error of 0.11 feet.

While this validation does not provide good correlation with the 2024 calibration, it does provide a general understanding of possible changes in model accuracy following future channel-modifying flood events.

This further supports the need to update future model versions following major flood events. Ideally, the model would be updated to represent new bathymetry and topography. At a minimum, model calibration should be performed to the latest event.

4.0 Simulated Event Results

Following model calibration, hypothetical flood events of varying intensity (Section 2.3) were simulated to develop flood fighting inundation maps and evaluate impacts and efficacy of the proposed HESCO barrier.

Inundation mapping was to be established at whole foot stage elevations at the Mendenhall River gage. Events yielding whole foot elevations at the gage were determined using a rating curve established from stage and discharge hydrographs reported by the USGS during the 2024 GLOF event. Establishing a new rating curve from recent gage data provides the most representative rating curve for current channel conveyance up to the peak historic flood event.

4.1 Existing Conditions

Simulated peak stage at the Mendenhall River gage deviates from the USGS rating curve at upper and lower limits, intersecting the rating curve near the 2024 GLOF event to which the model was calibrated. (Figure 4-1). At lower magnitude events this is attributed to error imparted by a lack of bathymetry in the model, specifically at Mendenhall Lake Outlet through the river reach to Back Loop Road. It is this geometry that largely controls stage at the gage, as well as the discharge conveyed through the modeled reach. At higher flood events, differences are likely attributed to extrapolating the curve beyond the 2024 maximum historic peak event, as well as model limitations. A comparison of rating curve and simulated peak stage at the gage are presented in Table 4-1.

It is unknown what magnitude of error is imparted through the study reach. Because the model was calibrated to the 2024 event, there is incrementally more uncertainty in simulation error for events that fall below the 2024 peak. However, there is still uncertainty in the accuracy of the rating curve as it assumes a relationship between measured stage and reported discharge. Above the 2024 peak stage the rating curve has been projected, imparting even greater uncertainty that cannot be quantified.

Ultimately, a gage rating curve will be used to relate discharge and stage when reporting future flood events. Given the error imparted by missing bathymetry, inundation maps were developed for the event discharges that yield whole foot elevations as determined by the rating curve, not the model.

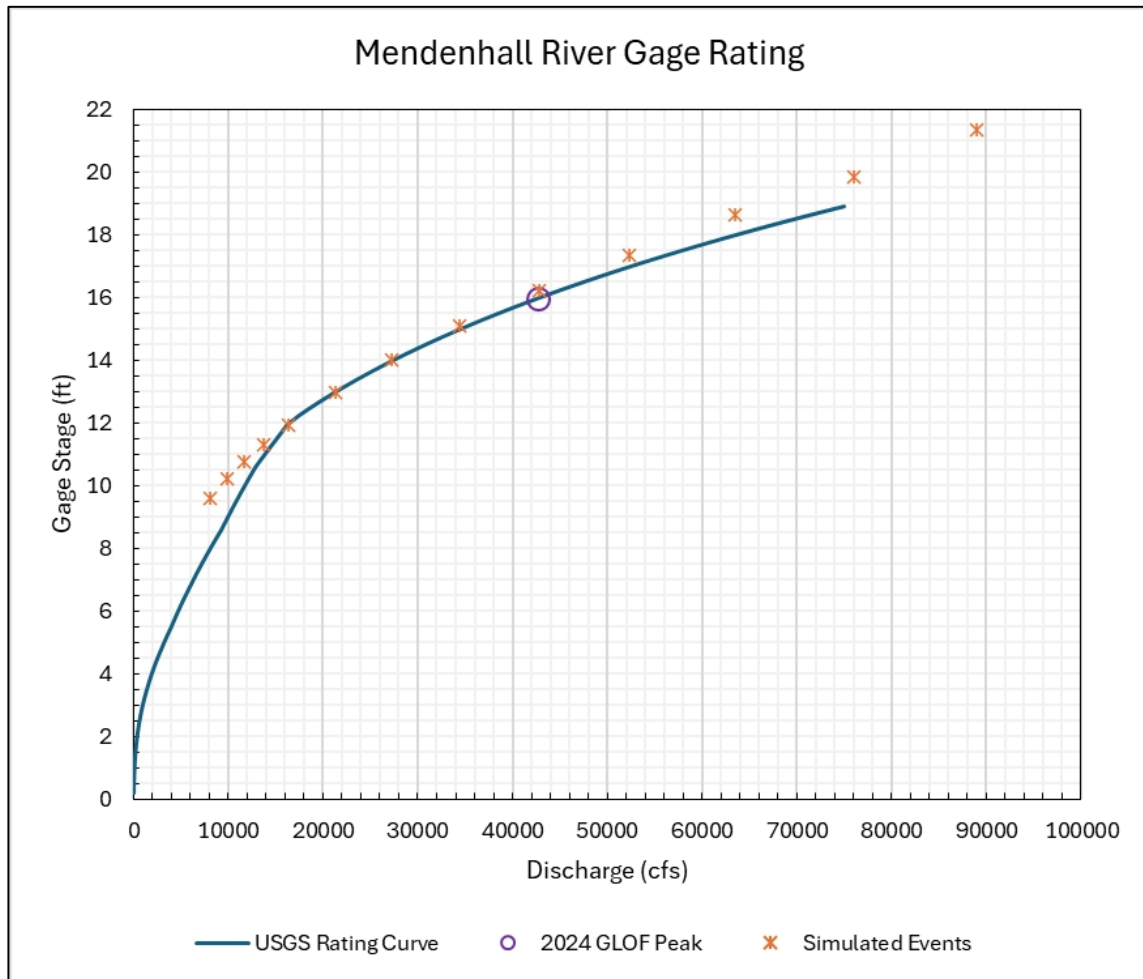


Figure 4-1 Rating Curve and Simulated Results at Mendenhall River Gage (USGS 15052500 / NWS MNDA2)

Table 4-1 Rating Curve and Simulated Peak Stage at USGS 15052500 / NWS MNDA2

EVENT	PEAK DISCHARGE (CFS)	RATING STAGE (FT)	SIMULATED STAGE (FT)	STAGE DIFFERENCE (FT)
8FT	8,080	8.00	9.58	1.58
9FT	9,923	8.99	10.23	1.24
10FT	11,706	9.99	10.75	0.76
11FT	13,798	10.99	11.30	0.31
12FT	16,405	11.99	11.93	-0.06
13FT	21,301	12.99	12.95	-0.04
14FT	27,289	13.99	14.02	0.03
15FT	34,404	14.99	15.10	0.11
16FT	42,788	16.00	16.21	0.21
17FT	52,369	16.99	17.36	0.37
18FT	63,515	18.00	18.62	0.62
19FT	76,039	19.00	19.86	0.86
20FT	89,002	20.00	21.33	1.33

4.2 Proposed HESCO Barrier Condition

The initial proposed HESCO barrier alignment was simulated using the 1% AEP (100-year) flood event and reviewed with CBJ. Minor changes were made to the alignment to minimize localized increases in stage with the HESCO in place. Restrictions in allowable HESCO placement, largely due to proximity of riverfront structures resulted in minor localized increases of 0.01 feet in the 100-year stage (Figure 4-2). This rise falls within the accuracy/resolution of the model and has no impact on existing structures (buildings).

The modified HESCO barrier alignment was then simulated using the 2024 GLOF event, which at 15.99 feet was nearly equivalent to the 16 foot gage stage, to evaluate relative efficacy and impacts of the HESCO barrier under the maximum historic flood condition. The HESCO barrier, as delineated in the model, provides complete protection of the Valley east of the barrier (Figure 4-3). As a result of confining eastern overflow to the channel, water surface elevations increase with only minor increases in flooding extents west of the channel. Simulated stage begins to increase at the Back Loop Road Bridge (+0.01 feet), achieving a maximum rise of 0.39 feet in the channel adjacent to Killewich Drive and dropping down to +0.08 feet at the Brotherhood Bridge. Increases in inundation are limited to low lying areas in the western floodplain. No residential or commercial structures are impacted by increases in flooding with the HESCO barrier in place during the 2024 GLOF.

During the simulated 18FT stage flood event the HESCO barrier continued to provide protection to the eastern Valley floodplain (Figure 4-4). Stage increased as much as 1.7 feet in the western floodplain near Montana Creek, with the maximum channelized rise of 1.40 feet occurring adjacent to Killewich Drive. Expa

ned flood extents with the HESCO in place do occur, most notably in the western floodplain. Downstream of Back Loop Road stage increases as much as 0.49 feet along N. Riverside Dr. and Tournure St., resulting in an approximate 15 to 20 foot widening of the floodplain. Additional flood extents do not capture buildings that are not already captured by flooding but could increase the magnitude of flooding to those existing structures. Under this condition, flooding of the Valley floodplain south of the HESCO barrier remains, however the stage largely drops in the eastern floodplain, as much as 0.8 feet, with a maximum rise of just 0.10 feet. The western floodplain near the Brotherhood Bridge experiences a rise of just 0.01 feet and no perceptible increase in flood extents.



Figure 4-2 Localized rise in 100-Year flood stage (red) as a result of the Proposed HESCO Barrier (white line)

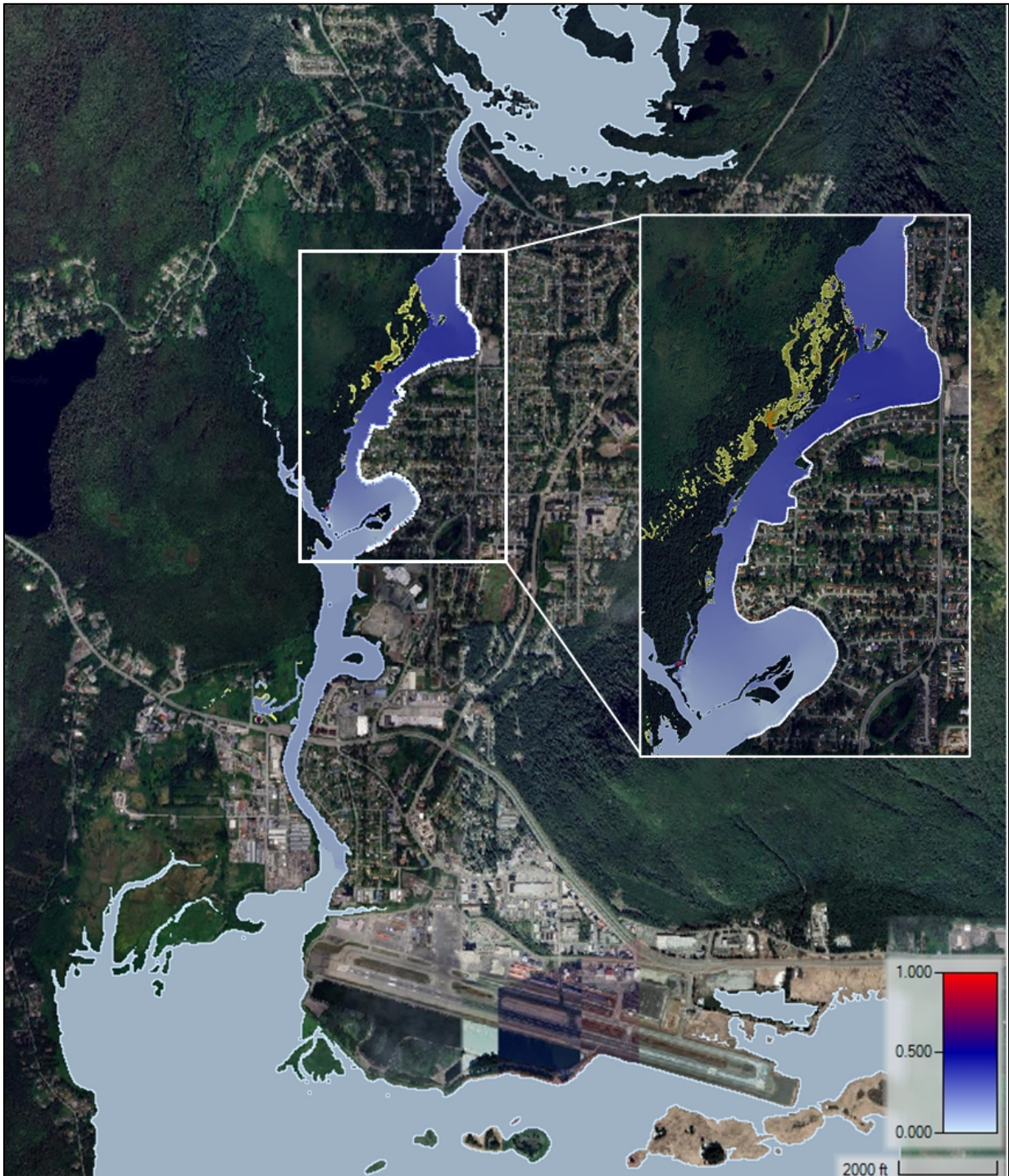


Figure 4-3 Simulated flood extents and rise in stage (feet) of 2024 GLOF as a result of the Proposed HESCO Barrier. Yellow depicts expanded flood extents as a result of barrier.

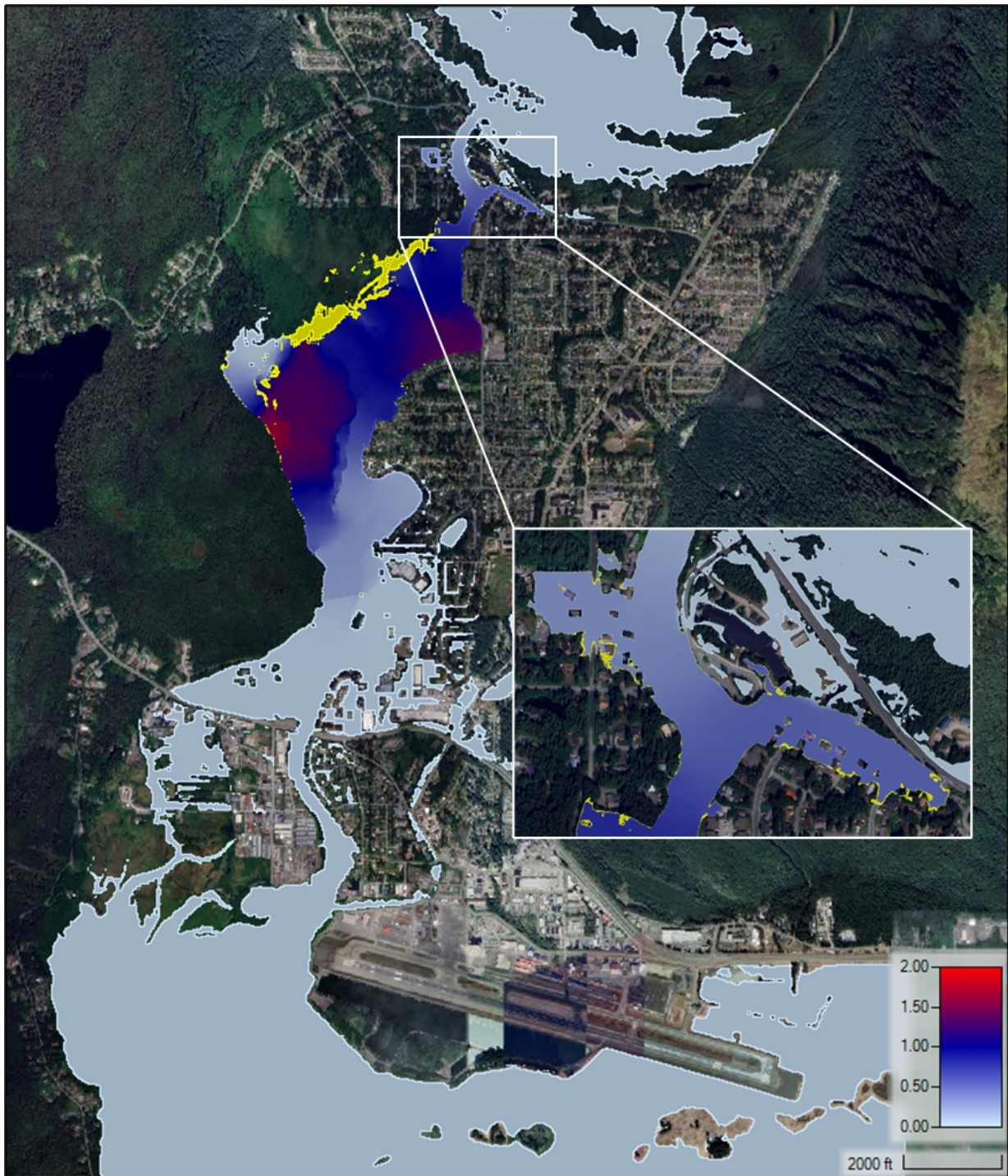


Figure 4-4 Simulated flood extents and rise in stage (feet) during an 18 FT flood event as a result of the Proposed HESCO barrier. Yellow depicts expanded flood extents as a result of barrier.

5.0 Inundation Mapping

Inundation maps of existing conditions were developed for the 8 ft to 20 ft stage events as determined by the USGS rating curve at the Mendenhall River gage. With each smaller event at lower stages, inundation mapping is largely inconsistent with historic measurements and is overly conservative near Mendenhall Lake (i.e. Skater's Cabin and USFS facilities). Future detailed modeling that incorporates Mendenhall River bathymetry at and downstream of the Lake outlet would likely minimize this error and allow for more accurate inundation maps at lower flood stage.

Extending simulated inundation mapping at higher events can similarly provide maps with increased uncertainty, given model limitations and use of an extrapolated rating curve. Flood maps out to the 20 ft stage should be used with an abundance of caution in their ability to predict actual flood conditions.

Inundation maps were developed for the 14 ft through 18 ft stage events under the proposed HESCO barrier condition. Additional information, including surveyed location and heights of HESCO barriers will be required to develop these maps above 18 ft stage. Actual HESCO elevations may not provide full protection under larger events.

5.1 Topographic Data

The topographic data used for inundation mapping is the same as the modeled topographic base map, described in Section 3.3.

5.2 Processing Steps

HEC-RAS 6.6 RAS Mapper was used to create an initial inundation boundary polygons and maximum depth grid raster for each event scenario. Render mode was set to Sloping (Cell Corners + Face Centers). RAS Mapper exported three depth rasters at a user defined resolution of 3 feet, one associated with each of the three source rasters used to develop the topographic base map.

Depth rasters exported from RAS Mapper were imported into ArcGIS Pro and merged using the Mosaic to New Raster tool. The inundation polygon generated in RAS Mapper was exploded, with individual polygon features selectively removed to eliminate hydraulically isolated ponding. This ponding is an artifact of mesh resolution and cell face placement, contributing a very small fraction of overall runoff volume and having no appreciable impact on model results. Some areas that appear to be hydraulically isolated but are connected via culverts or storm drains were maintained where reasonable. Remaining polygon feature parts were merged into a single feature representing the event specific inundation extents. Bridge decks were also removed from the inundation polygon where local maximum stage was equivalent to or greater than the bridge low chord. The merged depth grid raster was then clipped to the inundation polygon, snapping the clipped raster to the original mosaiced raster.

5.3 Uncertainties and Limitations

Results of this modeling and mapping effort have inherent uncertainties and limitations. Modeling is based on best available topography and bathymetry following the 2024 GLOF, largely limited by an absence of channel bathymetry. Simulation computations used the faster, more stable diffusion wave equation set that allowed for rapid development of flood maps and HESCO barrier analysis under the compressed project schedule. Though sensitivity analyses suggested little relative difference in model

solutions, the use of a full momentum equation set would provide more accurate results at the expense of computational time. Additional limitations include the uncertainty of future GLOF hydrograph characteristics, including probable release volume and peak discharge.

Model calibration was performed using observed flood data during the 2024 GLOF, the maximum historic flood. Uncertainties in observational data and the inability to simulate equivalent peak flood conditions at all observation points are not uncommon limitations that yield some level of model inaccuracy. Additional, uncertainty occurs when projecting simulated events above or below the calibration event.

Flood inundation maps are also subject to some uncertainty and error. Boundaries are based on simulated peak stage of a hypothetical flood hydrograph routed through a fixed channel geometry. Differences in the actual flood hydrograph and dynamic changes in channel geometry during flooding can yield differences in global and local flooding from those mapped in this study. Flood routing via the local stormwater system, not included in this model (Section 3.4.3), can also decrease or increase flooding in certain areas that are not currently represented in the maps.

5.4 Disclaimer

The flood inundation maps developed as part of this study are not intended to replace effective FEMA NFIP regulatory maps. The extents shown are intended to provide the community with a general understanding of potential near-term flood risk and to provide the City and Borough of Juneau planning resources to mitigate that flood risk. With HESCO maps assume full protection by the HESCO barrier: no overtopping and no breach. Actual HESCO elevations and structural integrity may not provide full protection under larger events

6.0 References

- Alaska Department of Fish and Game (ADF&G). 2024. Fish Passage Inventory Database (FPID). Spatial data and linked reports accessed December 2024 and January 2025.
<https://experience.arcgis.com/experience/1a4eb07b42ff4ebb8c71ba45adaedf0c/page/Fish-Passage/>
- Barnwell, W.W. and C.W. Boning. 1968. Water Resources and surficial geology of the Mendenhall Valley, Alaska,. U.S. Geological Survey Hydrologic Investigations Atlas 259.
- City and Borough of Juneau (CBJ). 2024. Spatially referenced and attributed polylines representing CBJ culverts. Provided by CBJ via email in November 2024.
- Curran, J.H., 2025, Flood frequency data for selected streamgages in the Mendenhall River Basin, Alaska, 1966–2023: U.S. Geological Survey data release, <https://doi.org/10.5066/P133MDF5>
- Federal Emergency Management Agency (FEMA). 2021. Guidance and Flood Risk Analysis and Mapping, Base Level Engineering (BLE) Analysis and Mapping. November 2021.
- FEMA. 2020. Flood Insurance Study (FIS), City and Borough of Juneau, Alaska. September 18, 2020. Flood Insurance Study Number 02110CV000B
- Michael Baker International (Michael Baker). 2024. Mendenhall Valley GLOF Modeling and Engineering Support, Task 1 Data Gathering Project Memo. December 27, 2024.
- Microsoft Maps (Microsoft). 2024. US Building Footprints for the State of Alaska. Accessed in November 2024.
<https://github.com/microsoft/USBuildingFootprints>
- Neal, E.G. and R.H. Host. 1999. Hydrology, Geomorphology, and Flood Profiles of the Mendenhall River, Juneau, Alaska. Water-Resources Investigations Report 99-4150.
- National Weather Service (NWS). 2025a. National Water Prediction Service, Mendenhall River Near Auke Bay (MNDA2), webpage.
- NWS. 2025b. Glacial Dammed Lake Data, Historic Release Data from Suicide Basin, webpage.
<https://www.weather.gov/aprfc/gdlData?17>
- NWS. 2025c. Suicide Basin Monitoring and Current Conditions, webpage. <https://www.weather.gov/ajk/suicidebasin>
- NWS. 2025d. Nested Suicide Basin GLOF hydrographs. Provided via email April 3, 2025.
MendenhallRiver_NWSAPRFC_GLOFcurveLibrary_20250403_forMichaelBaker.xlsx
- NWS. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. August 16, 2024. National Weather Service Alaska Region.
- NWS. 2023. Mendenhall River Flooding. August 5, 2023. National Weather Service Alaska Region
- NWS. 2016. Mendenhall River Flood Inundation Study 2015 (Post DQC Draft 1/05/2016). POC: Crane Johnson.
- State of Alaska (Alaska) 2024. NG911 Alaska Address Points. Accessed from the State of Alaska Geoportal in December 2024. <https://gis.data.alaska.gov/maps/agio-hub::ng911-alaska-address-points/about>

State of Alaska Division of Geological and Geophysical Surveys (DGGs). 2024. Juneau 2013 LiDAR DEM.
Accessed via DGGs Elevation Portal in November 2024. <https://elevation.alaska.gov/>

US Army Corps of Engineers (USACE). 2024. Hydrologic Engineering Center's River Analysis System (HEC-RAS)
model software, version 6.6. <https://www.hec.usace.army.mil/software/hecras/download.aspx>

U.S. Geological Survey. (USGS). 2025a. USGS 15052500 Mendenhall River Near Auke Bay Alaska
(MENDENHALL R NR AUKE BAY AK) Stream Site. Accessed March 27, 2025.
https://nwis.waterdata.usgs.gov/nwis/inventory/?site_no=15052500&agency_cd=USGS

USGS. 2025b. USGS Ste No. 15052500 Rating Curve. Accessed March 27, 2025.
https://waterdata.usgs.gov/nwisweb/get_ratings?site_no=15052500&file_type=exsa



Frequently Asked Questions About Base Level Engineering

August 2022



FEMA

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1. What is Base Level Engineering?

Base Level Engineering (BLE) creates flood data through an automated process. It combines high-resolution ground elevation data and the latest flood models. The results give communities a basic understanding of their flood hazards. Engineering models from a BLE analysis produce data that meet FEMA's standards for flood risk analysis and mapping.

BLE analyses can be cost-effectively done on a large scale, for a county or a watershed. They can also target a portion of a single stream. The results of BLE analyses—including flood elevations—help communities learn more about their floodprone areas.

2. What are the benefits of Base Level Engineering?

BLE analyses support a more complete picture of flood hazards. They produce data for areas that have not yet been studied for a Flood Insurance Rate Map (FIRM). They can also provide Base Flood Elevation (BFE) information for a FIRM's Zone A areas that are not supported by an existing hydraulic model. FEMA also uses BLE data to help communities identify areas where the FIRM needs to be updated.

It's important to note that BLE analyses are scalable, and their results can be published on FIRMs. Users can refine BLE modeling to assess the impacts of changes in a watershed. This is useful for development reviews, permitting, Letters of Map Change, and planning FIRM updates.

3. What is my community's role in the BLE process?

Communities work with FEMA to review the BLE data. They discuss ways to use it. It can increase local awareness of flood risk, aid emergency response, and inform planning or economic development.

4. What data will my community receive?

The datasets below will be available for all studied streams. Additional datasets may be produced. BLE results meet all of FEMA's technical, engineering and mapping standards. They can be used to help update FIRMs.

- **Hydrologic Analysis** – Each assessment estimates the peak flows for multiple storm events. At a minimum, the 10%, 4%, 2%, 1%, and 0.2%-annual-chance events are included.
- **Hydraulic Modeling** – Either 1- or 2-dimensional models are developed. Models are typically generated from a terrain surface. They may include channel surveys and hydraulic structures.
- **Flood Extents** –The 1%- and 0.2%- annual-chance events have seamless floodplain boundaries.
- **Estimated Water Surface Elevation Grids** – Grids are made for the 1%- and 0.2%- annual-chance events. Grids for other events may also be available. They report a water-surface elevation for each grid cell.

- **Flood Depth Grids** – These are prepared for the 1%- and 0.2%-annual-chance events. Grids for other events may also be available. They report the depth of water expected during a flood for each grid cell.

5. How can my community use Base Level Engineering data?

BLE datasets can inform planning decisions and activities that lead to a stronger community:

- **Hazard Mitigation Planning:** Mitigation planners need high-quality hazard data to properly assess risk. This helps them build a mitigation strategy for their community. BLE data show the limits of flood hazard areas, which can be used to quantify potential losses. Using BLE results in FEMA's Hazus program can help users prioritize flood mitigation projects.
- **Floodplain Management, Community Planning and Permitting:** Data from BLE analyses can help a community identify its flood-prone areas. The data can be used to guide development. A community can also use the flood elevations for building permits and elevation certificates, where BFEs are not available. See [Floodplain Management Bulletin 1-98, Use of Flood Insurance Study \(FIS Data\) as Available Data](#). This explains how to use draft or preliminary FIS data to regulate floodplain development.
- **Emergency Management:** The results of BLE analyses can be used in many phases of emergency management. These include planning, preparedness, response, and recovery. They can help identify routes for evacuations and first responders, and locations for shelters.
- **Letters of Map Change:** Estimated BFEs from BLE analyses can be used to request a Letter of Map Amendment (LOMA) or Letter of Map Revision Based on Fill (LOMR-F) in Zone A.
- **Risk Communication:** BLE data can help users understand their community's flood hazards. It can help them focus evacuation plan messaging on the most at-risk locations.

6. Does Base Level Engineering data replace the effective FIRM in my community?

No, not immediately. BLE data supplements the flood hazard data you are already using. It gives you more data to use for permitting and development decisions.

If your community's risk level is high and the current FIRM data is shown to be inadequate, FEMA may develop or update a FIRM using the BLE information. Another option would be to select areas to prioritize for an enhanced (Zone AE) study based on the BLE information. This may be appropriate for communities with an ordinance that requires the use of adopted FIRMs for local development regulation and floodplain management.

7. Can I use Base Level Engineering results to determine Base Flood Elevations in my community?

Yes. In most cases, you can use the results from a BLE analysis in local BFE determinations. It can be used for areas mapped as Zone A or D. It is also useful in areas where the effective FIRM has no mapped Special Flood Hazard Area (SFHA). If the area has been studied by more enhanced methods (Zone AE), use the effective FIRM and the flood profiles in the FIS report instead.

8. Can I use Base Level Engineering information to support a Letter of Map Change?

BLE data can be used to determine a BFE in Zone A. It can also support a request to remove the SFHA designation from a lot or structure. Submit the BLE results to FEMA with your LOMA or LOMR-F application. FEMA will see if it meets the technical and accuracy requirements for this kind of request.

You can also use a draft BLE analysis for a Letter of Map Revision (LOMR) request. If the data comes from a source other than the agency, FEMA will check whether it meets the technical and accuracy requirements for regulatory information. If additional data is needed, FEMA will ask you or your community to submit it.

9. Can my community adopt Base Level Engineering information through my local floodplain ordinance?

Yes. In general, communities may use BLE results as best available information if it is stricter than the effective data. They can also use it in areas with no data. Check your community bylaws, ordinances, and codes to find the appropriate way to adopt BLE information before using it to make decisions.

10. How does BLE data help during and after Discovery?

When it is available, communities can use BLE data for communication during the Discovery phase of Risk MAP. BLE data and mapping can be effective in the following ways. It can be used to:

- Address stakeholder interests when new flood hazard information becomes available.
- Identify areas at risk that may not have been mapped previously.
- Inform floodplain management and disaster recovery.
- Show where floodplain boundaries or BFEs may change and what areas would be affected.
- Identify streams where an enhanced analysis may be needed.

TECHNICAL SPECIFICATIONS

FLOOD BARRIERS

FLOODLINE™ 4836 UNIT



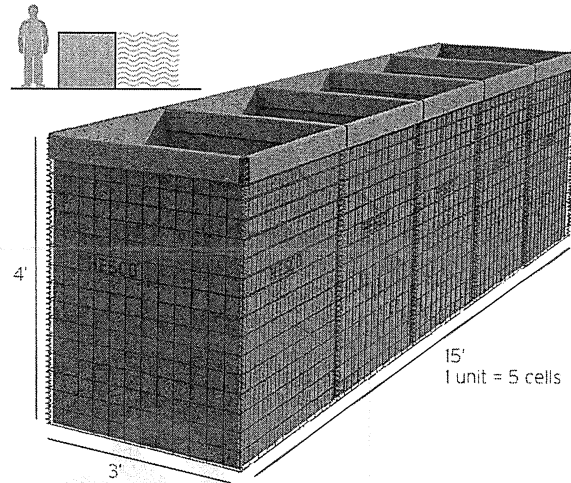
UNIT	HEIGHT	WIDTH	LENGTH
SL4836 (Green)	4' (1.22m)	3' (0.91m)	15' (4.57m)

Geotextile-lined units suitable for a wide range of uses, including the construction of walls and barriers, flood protection, erosion protection, protection against accidental explosions and homeland security applications. FLOODLINE units are particularly suitable in flood areas where damage from floating debris may be an issue.

GENERAL SPECIFICATIONS

Geotextile-lined welded mesh barrier coated to ASTM A 856. All wires conform to BS EN 10218-2:2012. Zinc-Aluminum coatings are to BS EN 10244-2:2009, where appropriate. The geotextile is a heavy-duty, non-woven, permeable, polypropylene fabric, available in green color.

All dimensions and weights are nominal. Diagrams and product images are for illustrative purposes only.



PACKAGING AND TRANSPORT INFORMATION

FLAT-PACKED INDIVIDUAL UNIT DIMENSIONS & WEIGHTS

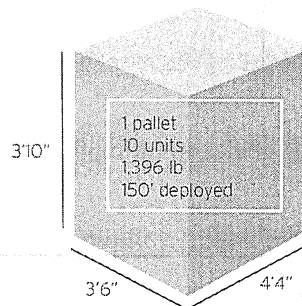
HEIGHT	WIDTH	LENGTH	WEIGHT
5" (0.13m)	3'6" (1.07m)	4' (1.22m)	136 lb (62kg)

PALLET INFORMATION

PER PALLET	HEIGHT	WIDTH	LENGTH	WEIGHT
10 units	3'10" (1.17m)	3'6" (1.06m)	4'4" (1.32m)	1,396 lb (633kg)

TRANSPORT INFORMATION

TYPE	PALLETS	UNITS	DEPLOYED LENGTH
13.5 Trailer	31	310	4,650' (1,417m)
20' Container	16	160	2,400' (732m)
40' Container	36	360	5,400' (1,646m)



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SITE CONSIDERATIONS, FOUNDATIONS AND DRAINAGE

The location where the structure will be built will normally be dictated by operational/ environmental requirements in response to the nature of the threat and the position of assets to be protected.

In most cases site preparation will be required. The level will depend on local conditions, wall design and/or time that the wall is expected to be in service.

The most basic requirement is a relatively level surface with a base of sufficient strength to support the structure. Where ground preparation is required the minimum procedure would be to strip all organic or topsoil material and replace with a granular fill material.

An improved foundation may be required when:

- The planned structure is large.
- The structure is to be in place for more than six months.
- The soil to be built on is weak and is unlikely to support the weight of the wall to be built.

The strength of the ground can be confirmed by using a cone penetrometer to ascertain the CBR¹.

¹CBR, or California Bearing Ratio - measure of the ground's ability to support loads.

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BASIC CONSTRUCTION TECHNIQUES

Whether the structure is a simple, single-course wall or a more complex structure, basic construction techniques are still the same:

- Layout
- Joining
- Forming corners and curves
- Filling

LAYOUT

- Units are delivered to site, flat-packed on pallets.
- Units are lifted off the pallet and placed in the desired location.
- Unit placed on the ground horizontally with the arrow pointing away from the desired direction the wall is to be erected (*Figure 3*).
- Two men each grasp the end panel and together move in the desired direction. The unit will concertina from the horizontal to the vertical and become self supporting (*Figure 4*).
- Pull the unit out to its full length. Check it is in the correct position (*Figure 5*).
- Adjust the outer walls of the unit so that they are parallel.
- Make any joints or extensions required before filling the unit (see *Joining*, page 19).

SAFETY Ensure all personnel are properly briefed on the correct method of lifting and carrying weight. Persons should only lift and carry the weight that they feel comfortable with.

JOINING

Most walls will require units to be joined end to end. This is achieved by using the supplied joining pins.

Butt together the units to be joined and overlap and interlock the coils on each butted corner (*Figure 6*).

Insert the supplied joining pin through the overlapped coils, ensuring that it connects the coils fully and that it is fully inserted (*Figure 7*).

Before filling, ensure all geotextile flaps at the base of the unit are tucked in (*Figure 8*).

If a single tier is required, filling can start after all units in a run are aligned and joined. Compacting must be undertaken (*Figure 9*), for every 300mm (1') lift of fill. (See page 25 for the correct approach to filling).

NOTE The joining operation must be carried out prior to placing fill in any of the cells to be joined. Care should be taken to ensure that units are horizontally aligned before joining.

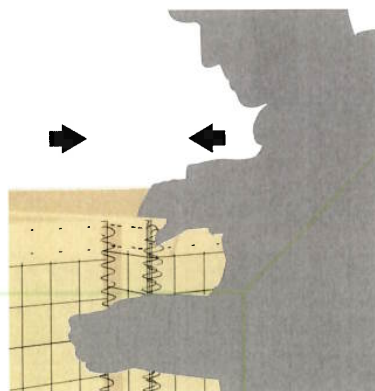


Figure 6 Butt together and overlap coils



Figure 7 Place joining pins

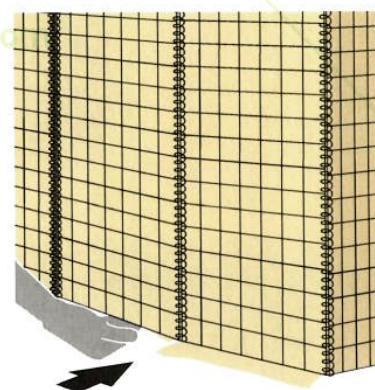


Figure 8 Tuck in flaps at base

JOINING VERTICALLY STACKED UNITS

Joining is achieved using the supplied hog rings.

- Fill the bottom unit to within approximately 100mm (4") from the top (*Figure 10*).
- Place the upper units and pull out (*Figure 11*).
- Alignment is achieved by lining the coils up vertically.

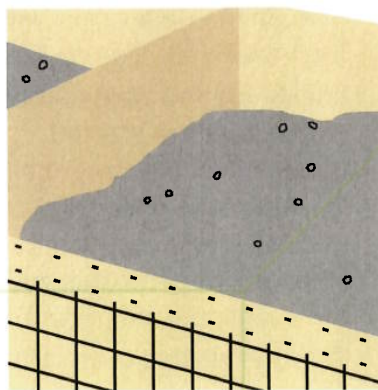
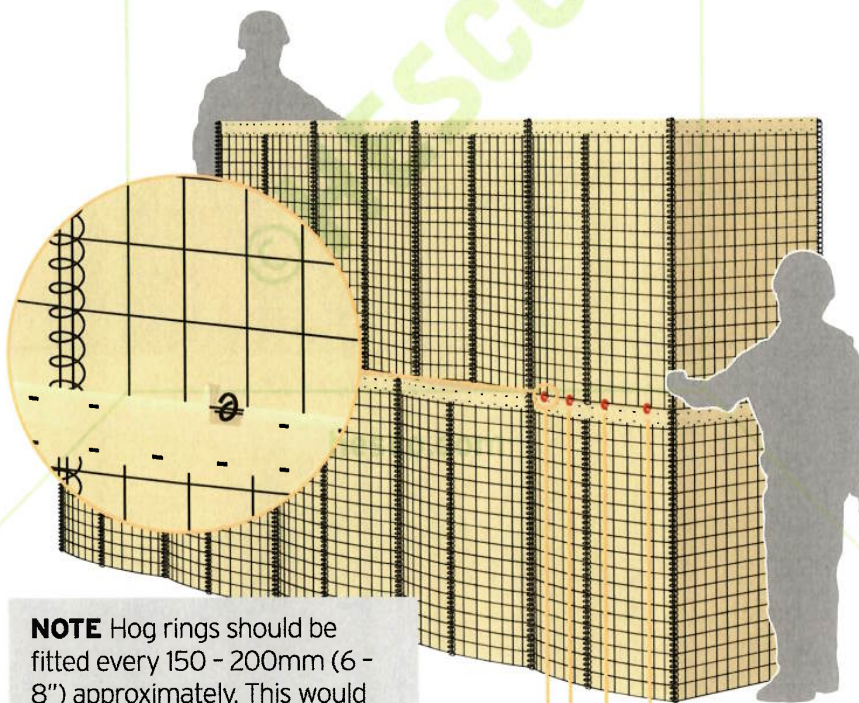


Figure 10



NOTE Hog rings should be fitted every 150 – 200mm (6 – 8") approximately. This would require two hog rings per MIL 2 side panel and four per MIL 1 side panel.

Suggested positions for hog rings

Figure 11

CORNERS AND CURVES

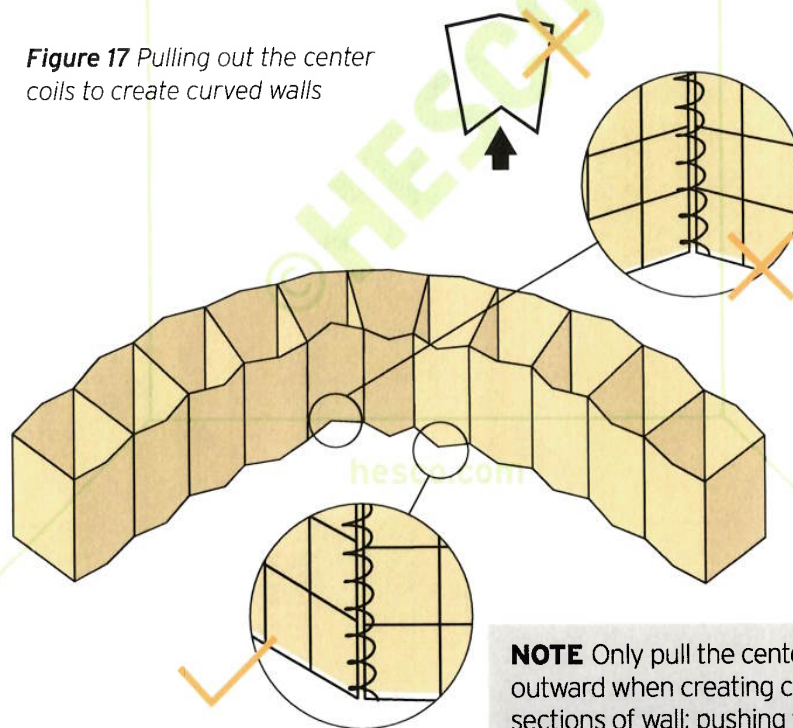
There are various methods of making corners and curves with units.

Where a curve is required, pull out the center coils on each cell until you achieve the desired curve (Figures 16 and 17).



Figure 16

Figure 17 Pulling out the center coils to create curved walls

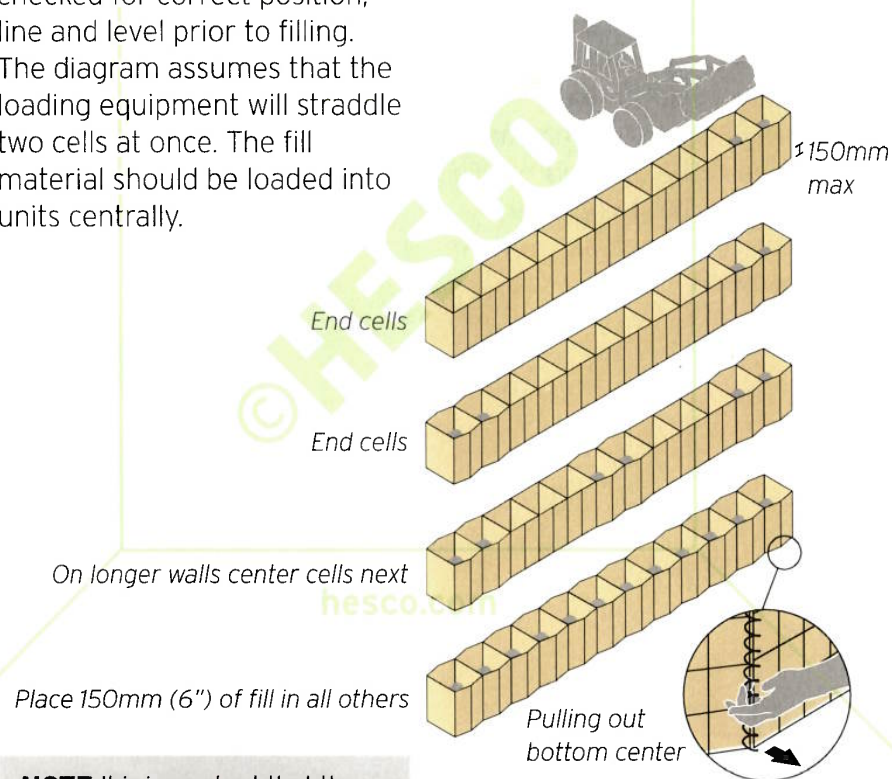
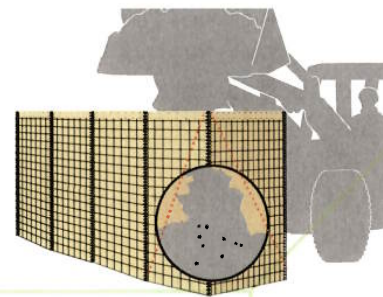


NOTE Only pull the center coils outward when creating curved sections of wall; pushing the center coils inward creates a wall section with less than the minimum protective thickness.

FILLING

The filling of a basic wall should be commenced with placing no more than 150mm (6") of material in the order shown in the diagram below.

It is important that the unit is checked for correct position, line and level prior to filling. The diagram assumes that the loading equipment will straddle two cells at once. The fill material should be loaded into units centrally.



NOTE It is important that the bottom center of each cell is pulled out after the first layer of material has been placed and spread, as shown at the bottom of the diagram.

DIVIDING AND SHORTENING

It is likely when building walls and structures that the unit may have to be shortened. Units are easily modified to suit this requirement. The majority of units arrive on site with the in-built ability to be split into two. With the MIL 1 unit, for example, this will result in two segments: one of four cells and the other of five.

Segments can be further shortened simply by folding in the end cells and securing by overlapping the coils and fitting pins. This can reduce the segment length by either one or two cell lengths. A unit can be further shortened using the procedure below:

- Erect the unit as shown on page 18, but do not fill.
- Open the coil hinges by bending at the desired location of the cut (*Figure 20*), this will normally be at the center coil if one is fitted. The coil must be opened at the top and bottom to facilitate its removal.

- Remove the coil by unscrewing, counter-clockwise, completely (*Figure 21*). Repeat on the opposite side.
- Cut the geotextile. Leave a 150mm (6") overlap if incorporating into a wall (see *page 29*).
- Separate the shortened segments (*Figure 22*).
- The coil can then be re-inserted to secure the loose side panels if required; alternatively, the loose ends can simply be incorporated into the wall.

Shortening the EPW 1 (UK MOD only) unit can be achieved by removing the pin securing the side panels.

NOTE If available, bolt croppers can be used to cut the welded mesh to speed the above operation.

All of the above methods result in the loss of a cell.

HALF SEGMENTS

Walls built up to existing structures may not fit exactly, therefore it may be necessary to split an end segment in half or add an extra half segment to the end to fill the gap (*Figure 23*).

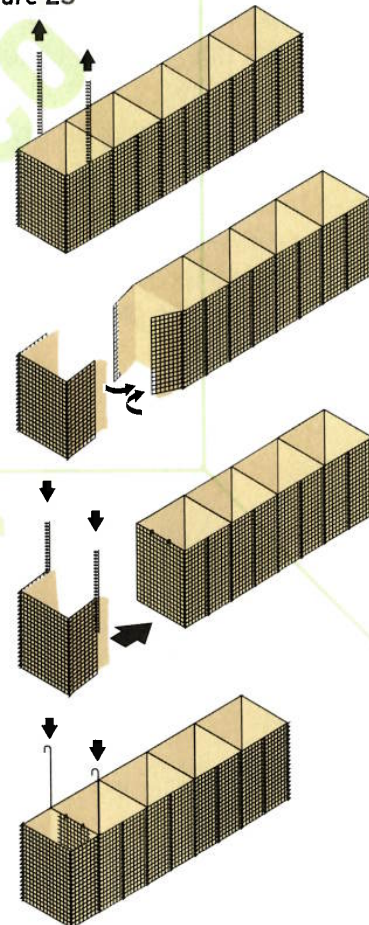
- To shorten a segment by half, unwind the two center coil hinges from the end cell of the unit.
- Cut the geotextile, leaving a 150mm (6") overlap, as shown. Fold in the two panels still attached to the unit and secure using hog rings.
- Rewind the hinges, butt the three loose panels up to the end panel of the unit.
- Fasten using joining pins.

To add a half segment to the end of a unit, remove a half segment from a spare unit and fit it to the unit to be lengthened by following the last two steps above.

NOTE This method is only applicable to units with a split side panel, as shown. Alternatively it can also be achieved by cutting the panel to the desired length.

The EPW 1 unit is split by removing the pins at the center of the side panel and then refastening the half cell to the end of the unit. To add half a cell, remove half a cell from a spare unit and fix it to the end of the unit in use.

Figure 23



BUILDING HIGHER WALLS

The building of higher walls will normally require a pyramid type structure to be formed. This is by far the best means of creating a competent high structure.

- Make sure the ground is level and firm before proceeding to build a tall wall.
- Deploy lower units and fill completely to the top (*Figure 27*).
- Place and join the units for the second layer and fill them completely (*Figure 28*).
- Place and join the units for the third layer and fill them completely (*Figure 29*).

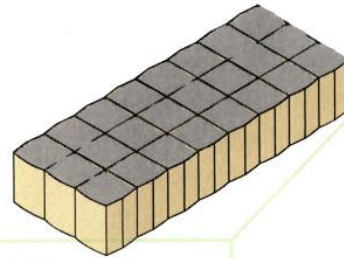


Figure 27

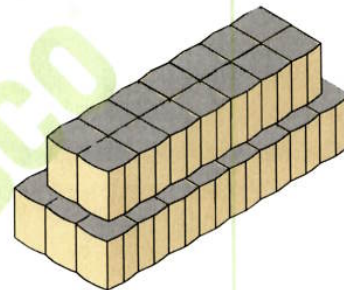


Figure 28

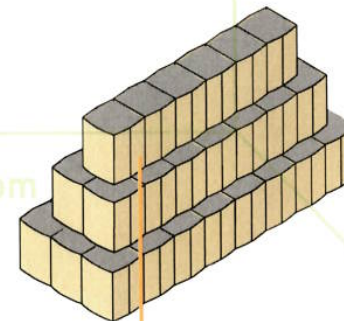


Figure 29 Offset subsequent tiers from the edge

WARNING Ensure the ground can withstand the loads from the units to be constructed.

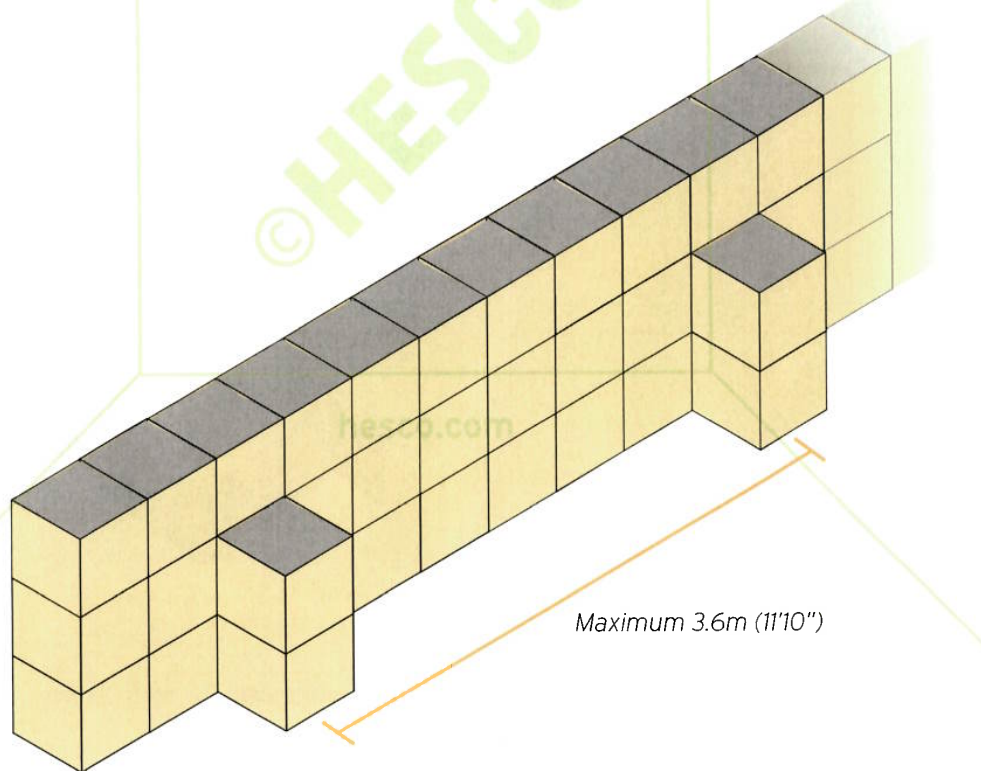
When building higher walls ensure the end wall is stepped in as shown in figure 29.

NOTE There is very little vertical joining required on a structure of this type.

INCREASE STABILITY OF THINNER WALLS

Due to a number of factors you may be required to build a tall, thin wall. In order to increase the stability of thinner defense walls, various alternative layouts can be used, as shown.

For example, if a MIL 2 wall, three storeys high, is adopted, then the wall should be laterally braced by intersecting walls or in-built stiffeners at no more than 3.6m (11'10") centers.



CONSTRUCTION PLANNING BASICS

FILL MATERIAL

The fill material used in building walls has a significant bearing on the walls' protective qualities. Generally, the ideal fill is a sand/gravel mix. This offers good construction characteristics, but, more importantly, offers a high degree of protection, with little incidence of secondary fragmentation.

Fine material such as silt and clay do not offer the same protection and may, indeed, require the wall to be wider. They are also not reliable construction materials.

Large clumps of earth should be avoided, as these may damage the unit, as can large stones.

In the main, large rocks or stones should be avoided as during a large blast they may present a secondary fragmentation risk. However, large rocks have been used where the threat has been accurately defined and there is no risk from secondary fragmentation.

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TABLE 2
FILL MATERIAL REQUIREMENT PER UNIT

UNIT TYPE	UNIT LENGTH (m)	NO. OF CELLS	MATERIAL PER UNIT (m ³)	MATERIAL PER UNIT (y ³)
MIL 1	10	9	22	29
MIL 2	1.22	2	0.5	0.7
MIL 3	10	10	13	17
MIL 4	10	10	20	26
MIL 5	3.05	5	1.2	1.6
MIL 6	3.05	5	4	5.2
MIL 7	27.74	13	190	249
MIL 8	10	9	25	33
MIL 9	9.14	12	9	12
MIL 10	30.5	20	133	174
MIL 11	3.18	6	9.2	12
MIL 12	33	30	103	135
MIL 19	3.3	3	13	17

NOTE The figures in Table 2 account for expansion of the unit, compaction of the fill and loss of fill.

REMOVAL

There may be a requirement to remove protective structures. This operation is often undertaken using heavy earthmoving plant to topple the walls and rip the welded mesh away from the fill material. While this method works, it results in a mass of welded mesh that is very difficult to handle and dispose of. The following pages, describe three alternative methods for removal.

The following risks may be present during demolition work:

- Working at height.
- Premature collapse of structure.
- Manual handling injuries.
- Collisions between earthmoving plant and pedestrians.

A safe system of work must be adopted and followed and should include the practices described below:

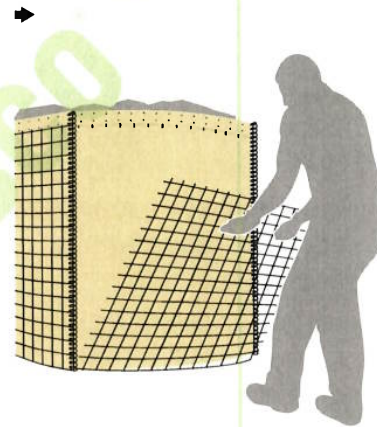
- Working at height should be minimized.
- When cutting the welded mesh always cut from the bottom up.
- Wear gloves and protective eye wear when handling cut and removed welded mesh.
- Competent banksmen to be appointed to manage earthmoving equipment and to ensure the operating area is kept clear of personnel.
- Ensure dump trucks are supervised whilst reversing.
- When an electric angle grinder or disk cutter is used it should be supplied with site-safe electricity.

WARNING Any demolition work can be dangerous. It is imperative that a safe system of work is adopted and followed, as described on this page.

REMOVAL - METHOD 2

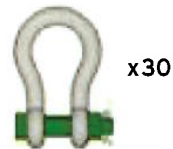
This method involves removing the welded mesh by hand and is only suitable for low walls.

- Identify and remove all material and equipment that is not to be disposed of.
- Use bolt croppers or an angle grinder to cut off all hog rings.
- Beginning at the bottom, cut the welded mesh all the way up both sides adjacent to the corner coils. Then cut the welded mesh across the top just under the stapled flap. Continue cutting until the welded mesh panel can be removed.
- Remove all accessible panels on a cell, as described in the previous step. The welded mesh of the diaphragm wall (between each cell's geotextile) should be removed as and when it becomes free.
- Do not cut the geotextile.
- Use earthmoving equipment to remove the fill (this will still be contained in the geotextile). The removal of the fill, where possible, should be carried out cell by cell.
- Continue until the site is cleared.

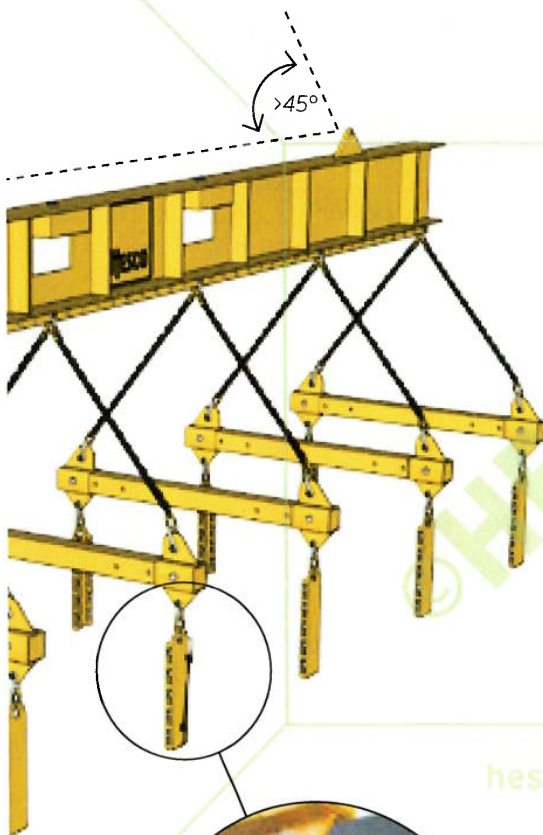


2 BASIC CONSTRUCTION GUIDELINES

Lifting strops/chains must be no less than 45 degrees from the horizontal Recovery Frame

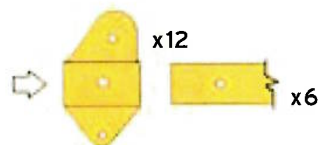


Ensure all nuts on 'D' shackles are secured correctly using the split pins provided



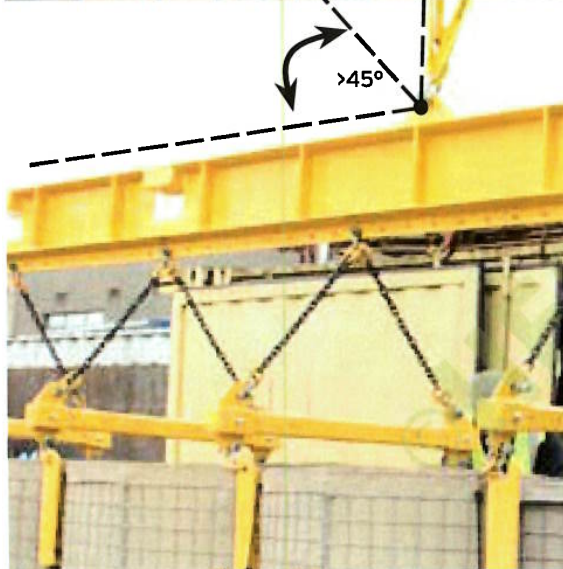
Securing cords used to hold the grips in place during the lifting phase

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Secure sleeve on the spreader-bar using the pin, with 'R' Clip

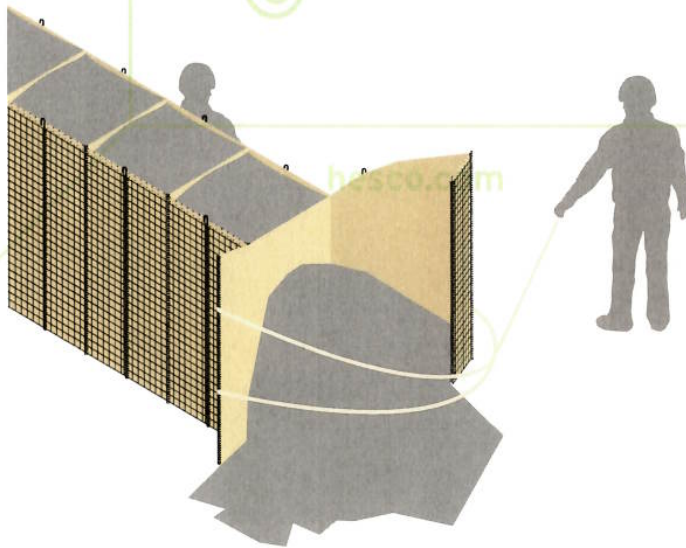
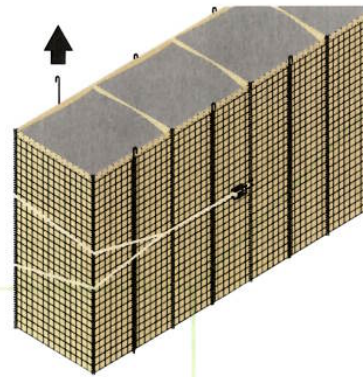


2 BASIC CONSTRUCTION GUIDELINES

- Prior to lifting, all personnel are to stand clear at least 5m from the units to be lifted. Once the banksman has confirmed that all lugs are located and that all personnel are clear from the area, the recovery process can begin.
- The lifting strops/chains must be no less than 45 degrees from the horizontal Recovery Frame as shown.
- Care should be taken to lift slowly and carefully paying particular attention to ensure that no chains or slings are twisted during lifting.
- Once the units have been lifted clear of the fill, the empty units can be lowered to the ground under guidance.
- Using a competent banksman; position the forks into the beam and secure using the T screws provided.
- Ensure that the beam is level, that the forks are parallel to the ground before securing and lifting, and that the machine is as close to the units to be lifted as reasonably practical.

The plain end of the Y-shaped strap is fed around the cell then joined to the ratchet strap, which is then hooked onto the far corner coil of the cell adjacent to the one being removed. Tighten the straps, using the ratchet, without distorting the coils.

Ensure only the pin on the opposite panel to the ratchet mechanism is removed. After removing this pin, release the ratchet strap, upon which the cell will swing open to release the fill material. Using a length of cordage assist in the operation. **All personnel must stand clear at this point.**



REPAIR PROCEDURE

Prior to repair, an assessment of the structure must be carried out by a qualified engineer/competent person.

Repairs to structures may be required as a result of attack or accidental mechanical damage. There are a number of repair techniques available, with the technique adopted depending on the nature and extent of the damage. In the majority of cases once repairs have been carried out the wall will once again be as competent as it was before the damage occurred.

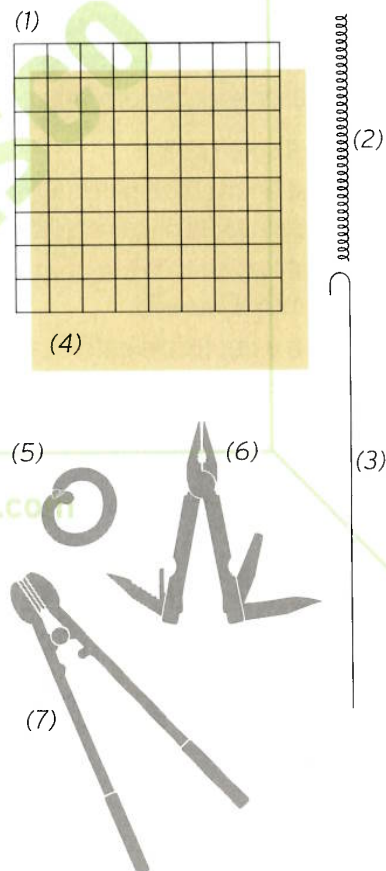
In general, material required for repair consists of:

- Welded mesh panels (1)
- Coils (2)
- Pins (3)
- Geotextile (4)
- Hog rings (5)
- Multi-tool (6)
- Bolt cutters (7)

Alternately repair material can be gained by cannibalizing parts from unused units.

Repairs may range from minor repair of torn geotextile to the repair or replacement of complete sections of wall.

The modular design of the units allows all of these repairs to be completed in an economical and efficient manner.



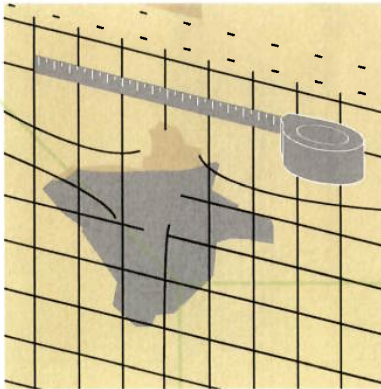


Figure 1

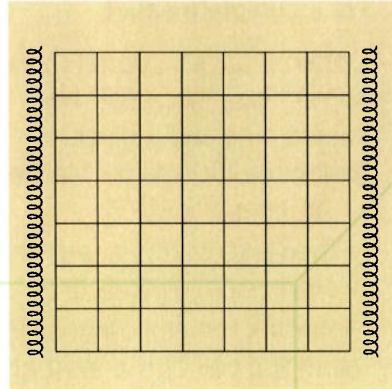


Figure 2

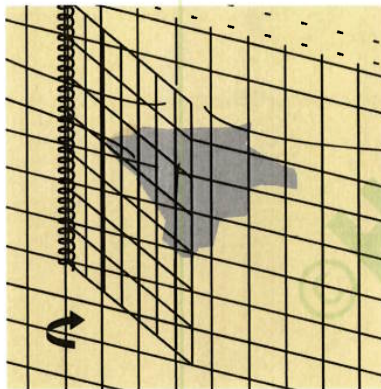


Figure 3

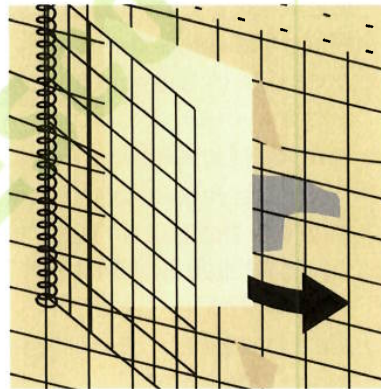


Figure 4

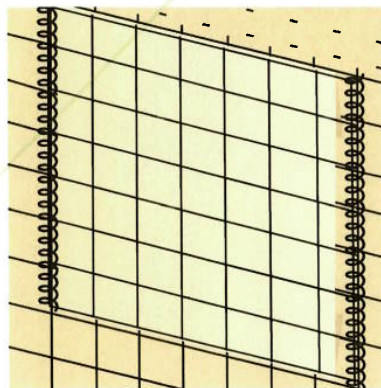


Figure 5

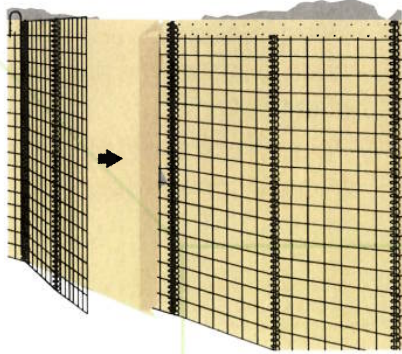


Figure 8

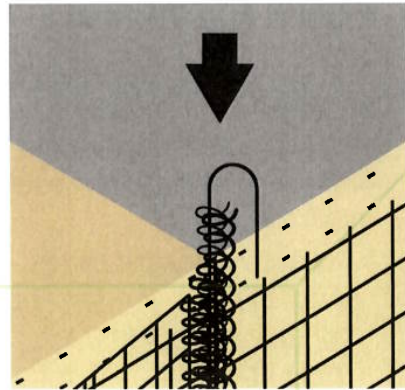


Figure 9

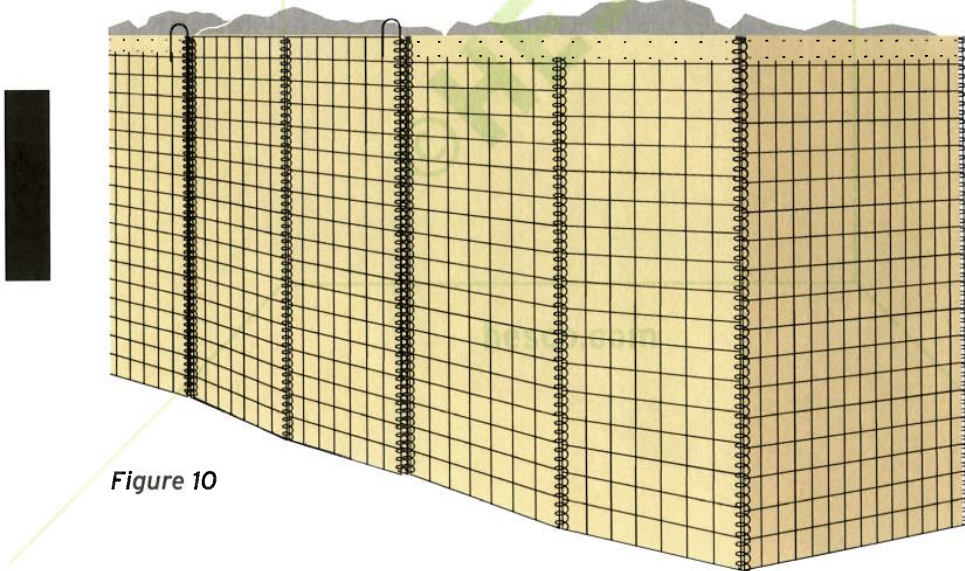


Figure 10

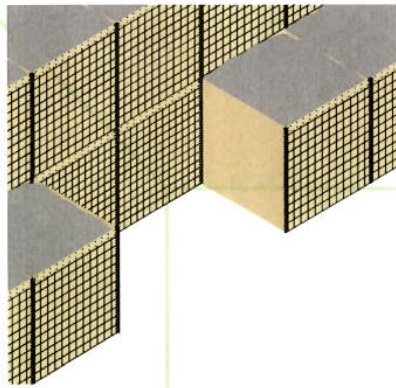


Figure 12

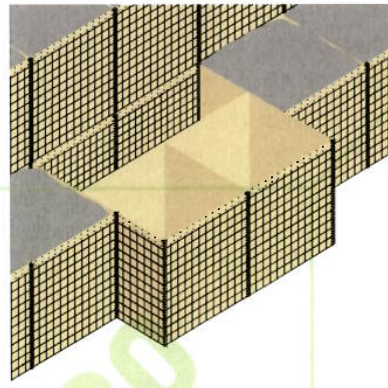


Figure 13

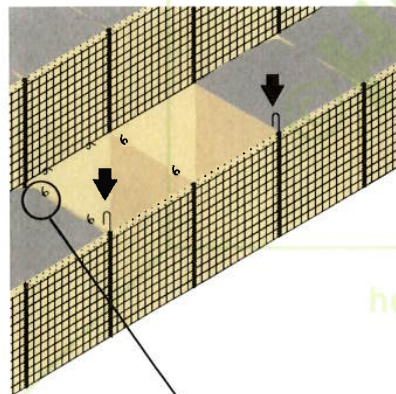


Figure 14 Cable tie or hog ring

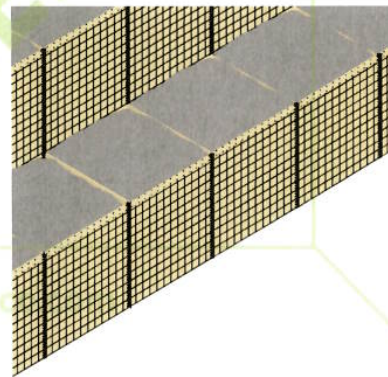


Figure 15

CAPPING

For structures which are expected to have a long service life, are in wind-affected areas or are adjacent to aircraft operating surfaces, it is important that loss of fill material is prevented. This can be achieved by a number of means:

- Fill material should be shaped and sufficiently compacted to allow moisture to run off.
- The structure can be covered by tarpaulins or other waterproof membranes.
- A lean mix concrete or cement bound material can be used as the final layer.
- Where fine sand has been used as the bulk fill and is susceptible to being blown out by the wind, then a slightly coarser aggregate can be used to cap the cells.

PROTECTION AGAINST ULTRAVIOLET RADIATION

The geotextile used in HESCO Units is susceptible to the effects of UV radiation after a period of prolonged exposure.

Substantial developments and testing was carried out to produce the geotextile.

One of the problems with trying to predict the effects of UV is that it varies considerably from region to region and can, in fact, differ within the same region. There are, of course, a number of other issues which affect the severity of any degradation that may occur:

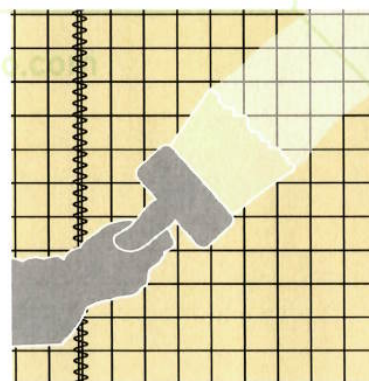
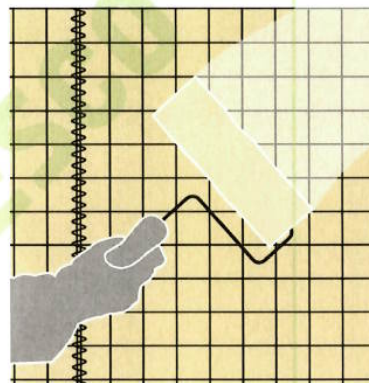
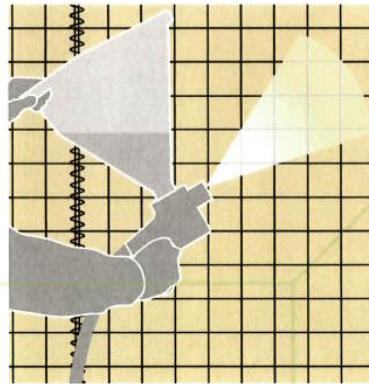
- Fill material used in the cells.
- Orientation of the units exposure to the sun.
- The level of fill within the unit.
- Stresses placed on the geotextile.

APPLICATION OF PROTECTIVE COATINGS

The application of a protective coating, such as cement slurry or, indeed, paint (water-based emulsion), is likely to significantly extend the life span of the geotextile.

A sprayer such as a stucco gun (texture gun) connected to a 7.5 cu ft/min compressor is ideal for the application of cement slurry or paint. Cement slurry or paint can also be applied by brush or roller.

Cement slurry is simply a mixture of cement powder and water. It is mixed to a strength of approximately 1:1 but this can be adjusted to suit whatever application method is being used. Sand can also be added if desired. The unit to be coated is often wetted prior to the application of the slurry; this prevents the slurry from drying out too quickly.





DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 22270
JUNEAU, AK 99802-2270

March 14, 2025

Regulatory Division
POA-2025-0089

Mr. John Bohan
City and Borough of Juneau
155 Heritage Way
Juneau, Alaska 99801

Dear Mr. Bohan:

This is in response to your February 16, 2025, application for a Department of the Army (DA) permit to place 935 cubic yards of shot rock and 3,735 cubic yards of rip rap fill material into 0.45 acres below the ordinary high water mark of the Mendenhall River to stabilize 1,085 linear feet of river bank. It has been assigned file number POA-2025-0089, Mendenhall River, which should be referred to in all future correspondence with this office. The project site is located within Section 24, T. 40 S., R. 65 E., Copper River Meridian; USGS Quad Map QUAD Juneau B-2; Latitude 58.38544° N, Longitude 134.59597° W; at three locations off Killewich Drive, North Meander Way, and South Meander Way in the Mendenhall Valley, in Juneau, Alaska.

DA authorization is necessary because your project will involve the placement of fill material into waters of the United States under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which will be performed in accordance with the enclosed plan (sheets 1-7), dated February 2025, is authorized by Nationwide Permit (NWP) No. 13, Bank Stabilization. Enclosed is a copy of the NWP No. 13, as well as the Regional and General Conditions. These documents are also available on our website at <https://www.poa.usace.army.mil/Missions/Regulatory/Types-of-Permits/Nationwide-Permits/>. The following Regional Conditions apply to your project: E – Delineation of Project Footprint and Maintenance of Hydrology Patterns. You must comply with all terms and conditions associated with NWP No. 13.

Further, please note General Condition 30 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to our office.

Unless this NWP is modified or revoked, it expires on March 14, 2026. If you commence or are under contract to commence this activity before the date that the

-2-

NWPs are modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWPs to complete the activity under the present terms and conditions of these nationwide permits. It is incumbent upon you to remain informed of the changes to the NWPs.

Nothing in this letter excuses you from compliance with other Federal, state, or local statutes, ordinances, or regulations.

Please contact me via email at Ranal.P.Vigil@usace.army.mil, by mail at the address above, by phone at (907) 201-5022, if you have questions. For more information about the Regulatory Program, please visit our website at www.poa.usace.army.mil/Missions/Regulatory.

Sincerely,

A handwritten signature in black ink, appearing to read 'Randal P. Vigil', written over a large, stylized circular flourish.

Randal P. Vigil
Chief, Southeast Section

Enclosures

ENCLOSURE



**US Army Corps of Engineers
Alaska District**

Permit Number: POA-2025-00089
Name of Permittee: City and Borough of Juneau
Date of Issuance: March 14, 2025

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to Randal Vigil at regpagemaster@usace.army.mil, or the following address:

U.S. Army Corps of Engineers
Alaska District
Regulatory Division
P.O. Box 22270
Juneau, AK 99802-2270

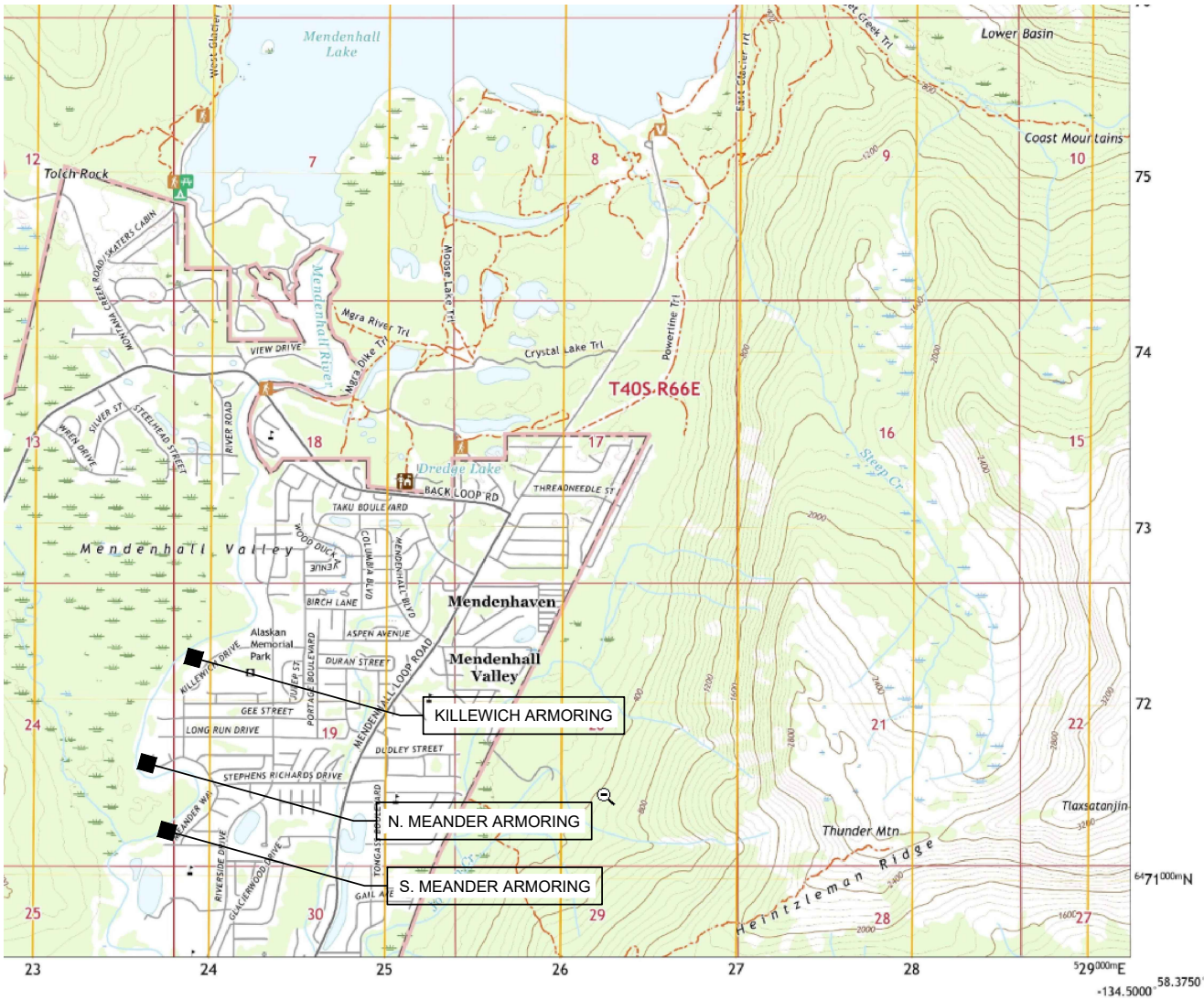
Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

1	-	COVER AND LOCATION MAP
2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

POA-2025-00089 Mendenhall River

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

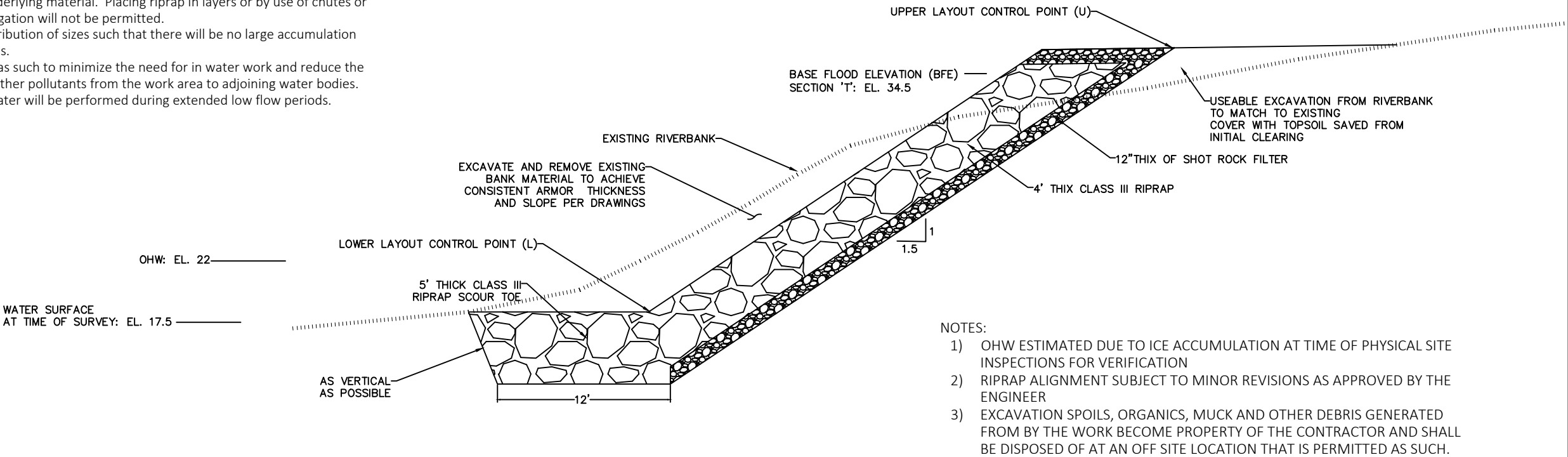
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

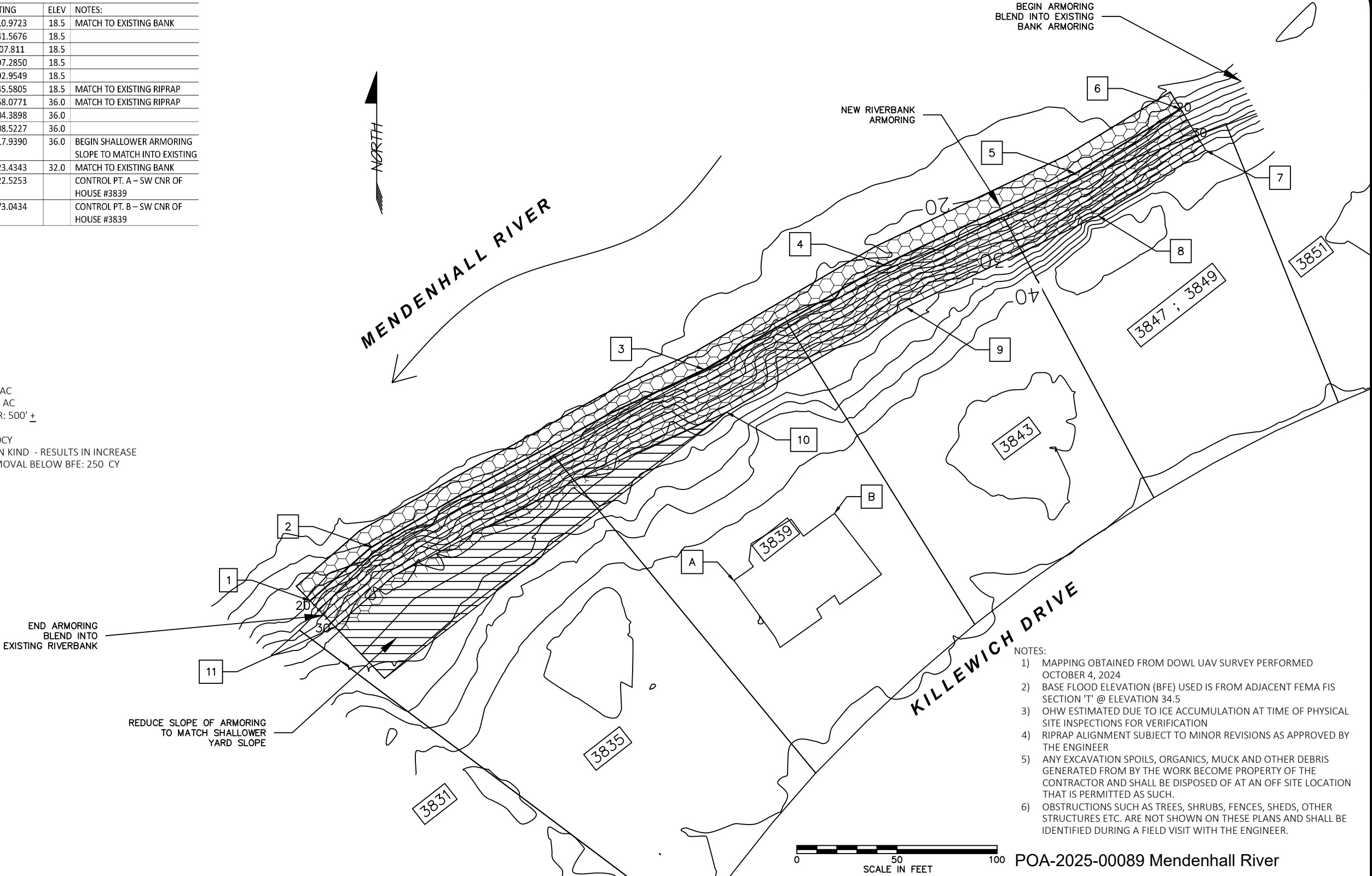
KILLEWICH ARMORING
TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
----------------	-----------------	-----------------

SHEET:
2 of 7

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 500' ±
 - 4) TOTAL RIPRAP VOLUME: 4,950 CY
 - 5) RIPRAP VOLUME BELOW OHW: 2210CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY



- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

KILLEWICH ARMORING
CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:
3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

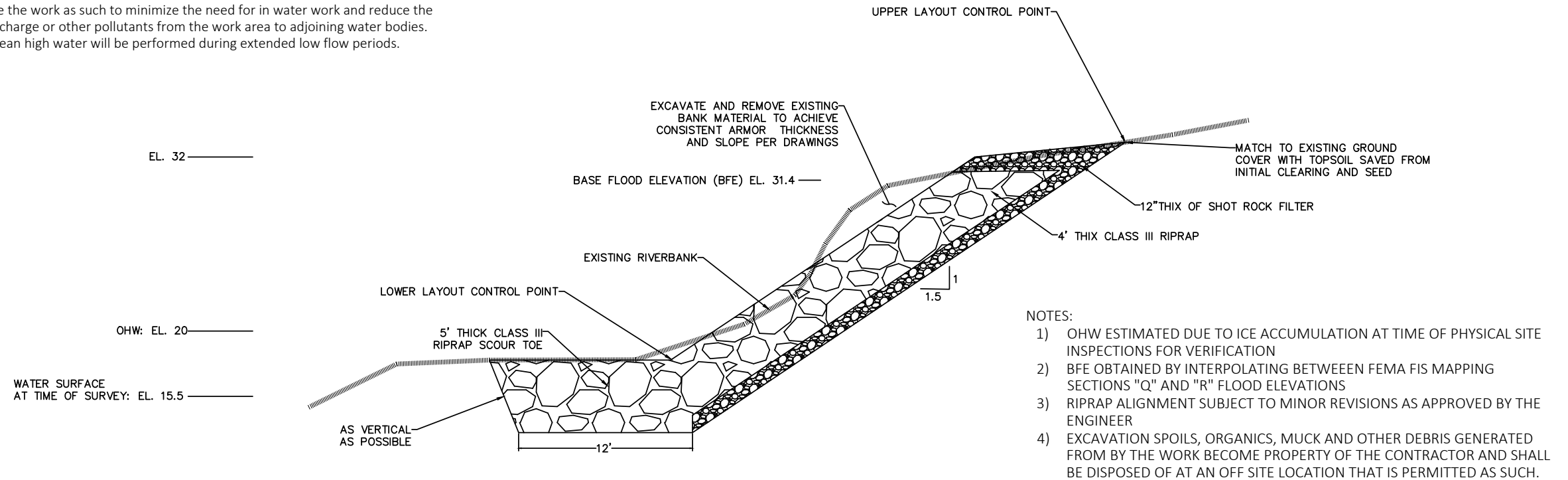
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) BFE OBTAINED BY INTERPOLATING BETWEEN FEMA FIS MAPPING SECTIONS "Q" AND "R" FLOOD ELEVATIONS
 - 3) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

N. MEANDER ARMORING

TYPICAL SECTION

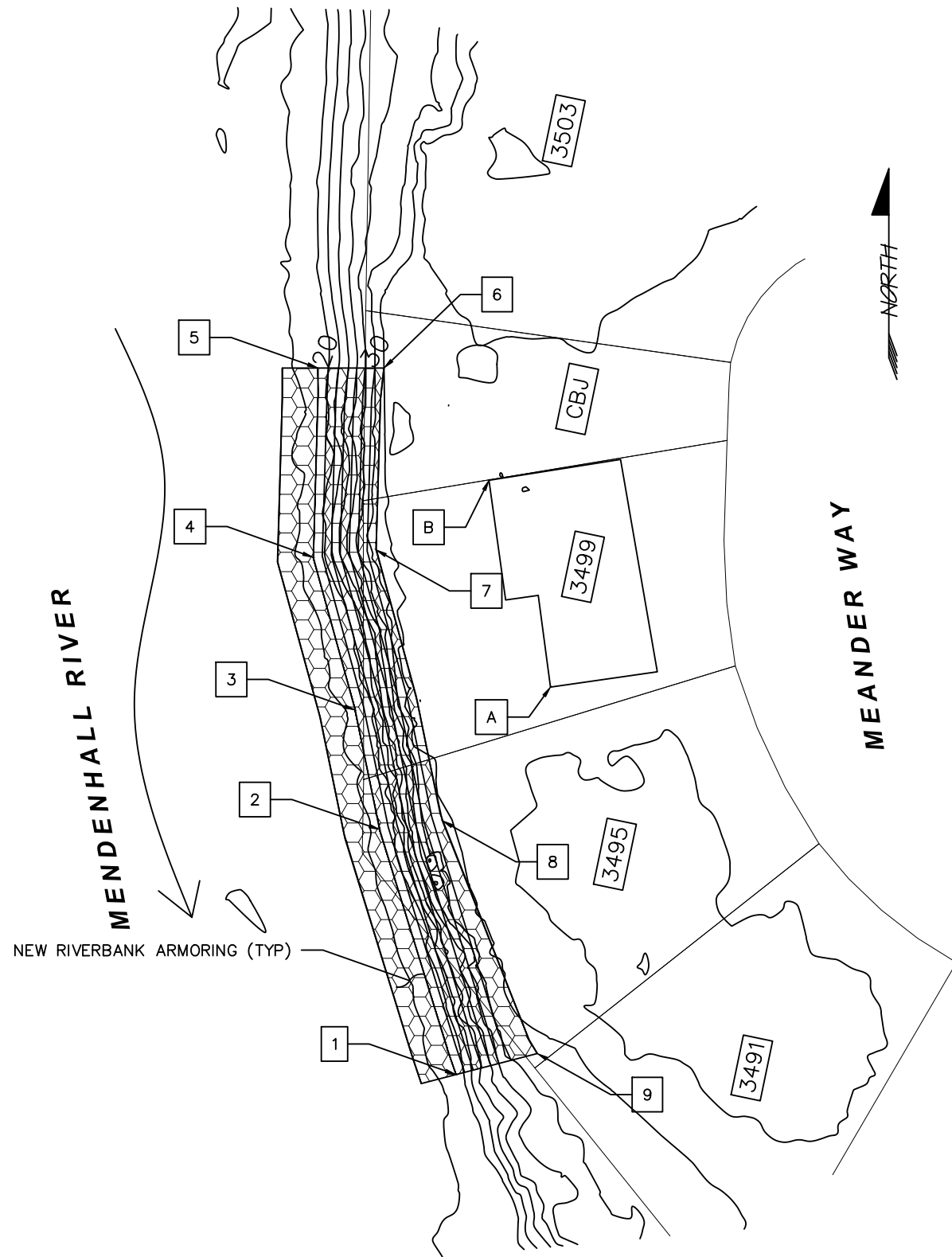
DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:

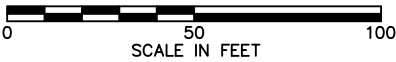
4 of 7



- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 1540 CY
 - 5) RIPRAP VOLUME BELOW OHW: 770 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 7 CY

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2393896.5525	2507610.8681	18.0	Match TO EXISTING BANK
2	2393978.9938	2507585.2101	18.0	
3	2394019.0284	2507577.0045	18.0	
4	2394070.3146	2507562.9437	18.0	
5	2394133.9212	2507564.5190	18.0	MATCH TO EXISTING RIPRAP
6	2394133.9212	2507586.6734	32.0	MATCH TO EXISTING RIPRAP
7	2394072.8377	2507584.0270	32.0	
8	2393981.8148	2507606.2823	32.0	
9	2393903.6179	2507638.1839	32.0	MATCH TO EXISTING BANK
A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT – NW CNR HOUSE #3499

- NOTES:
- 1) THIS WORK WILL BE TO RECONSTRUCT AN EXISTING RIPRAP ARMORED BANK. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS ELEVATION 30.4. THIS HAS BEEN INTERPOLATED BETWEEN FEMA SECTIONS 'Q' AND 'R'
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

N. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:
5 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

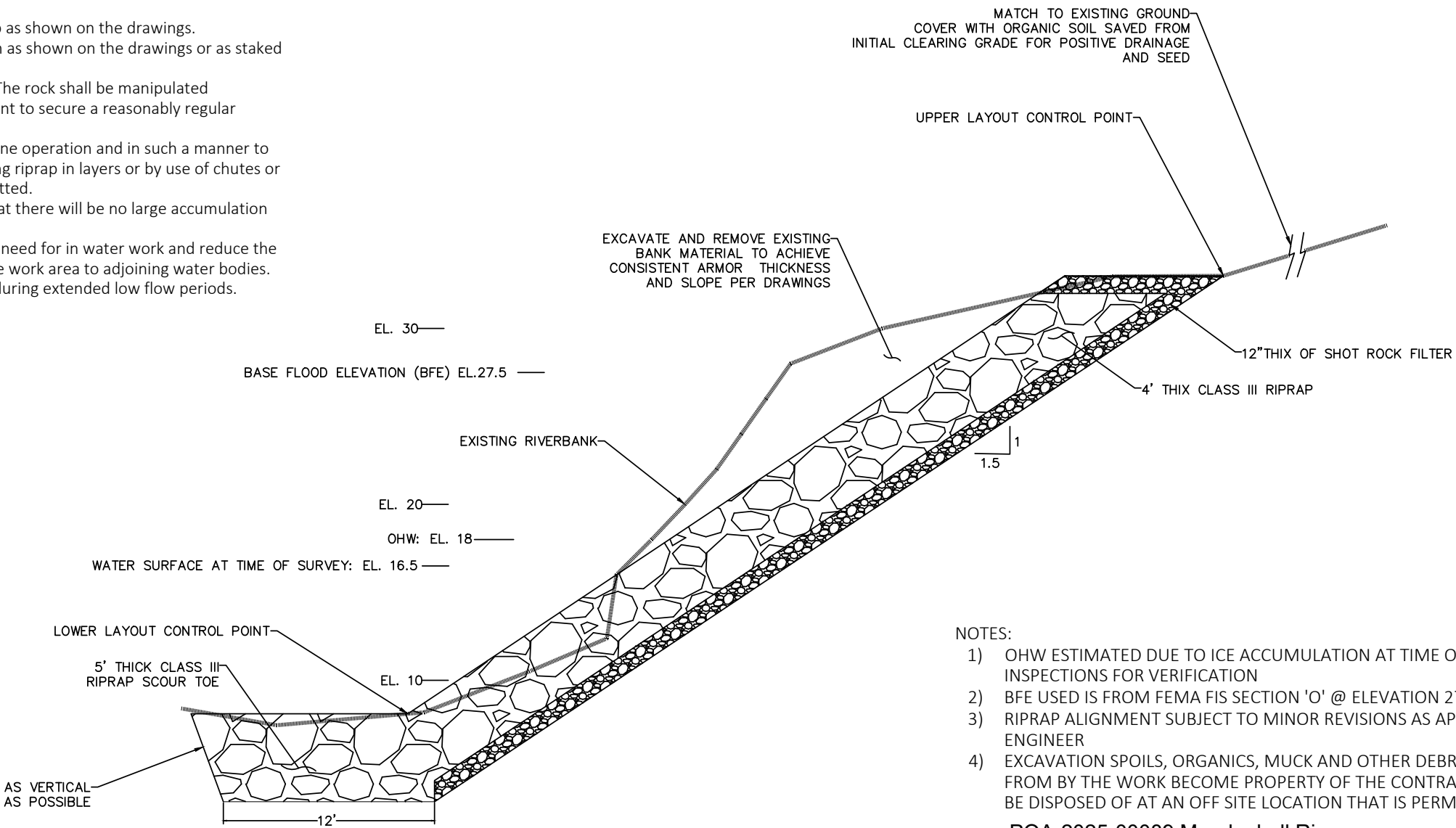
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) BFE USED IS FROM FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 3) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
- POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING

TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

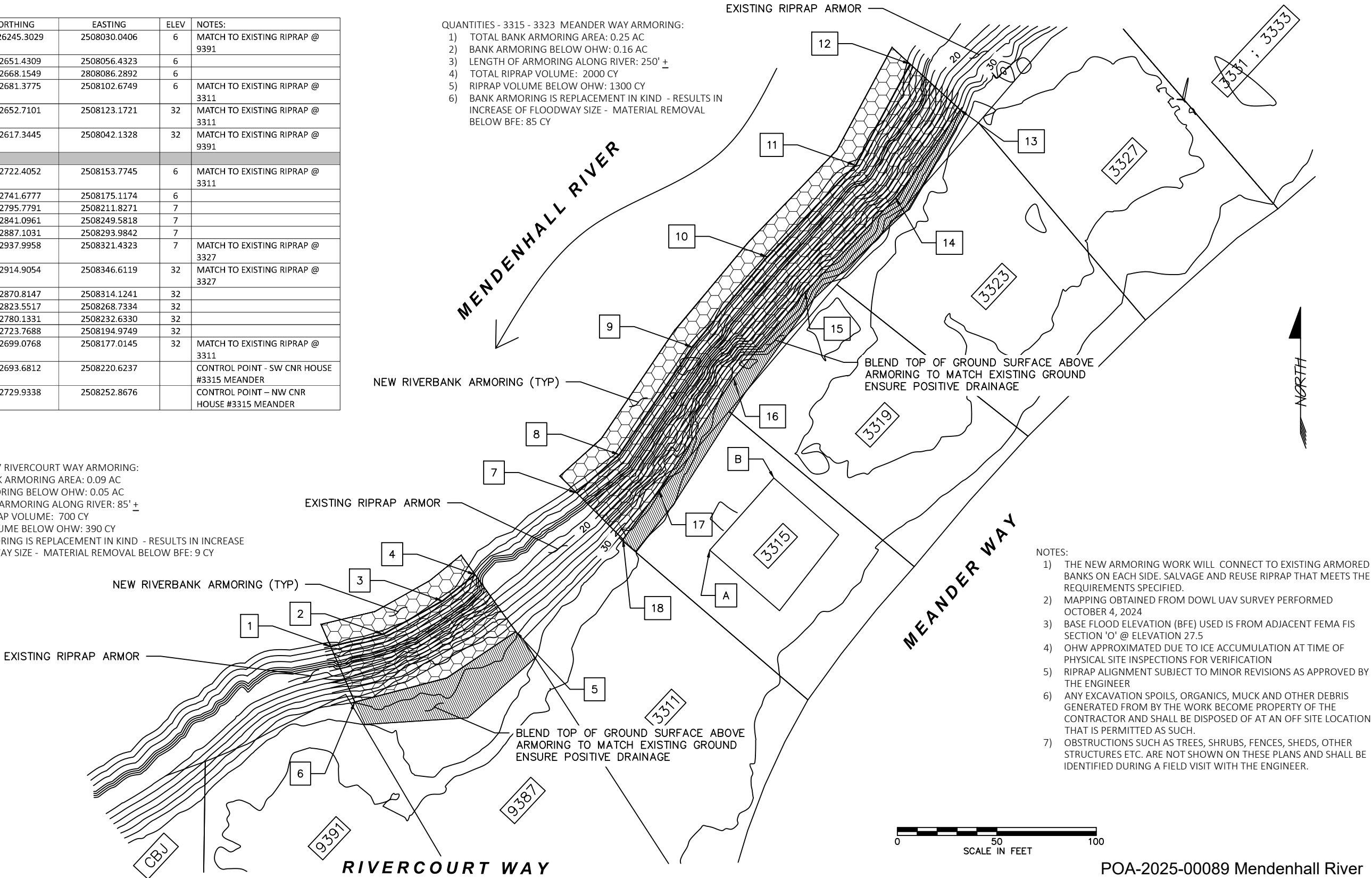
SCALE: NOT TO SCALE

SHEET:
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POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 85' ±
 - 4) TOTAL RIPRAP VOLUME: 700 CY
 - 5) RIPRAP VOLUME BELOW OHW: 390 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) LENGTH OF ARMORING ALONG RIVER: 250' ±
 - 4) TOTAL RIPRAP VOLUME: 2000 CY
 - 5) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 6) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

POA-2025-00089 Mendenhall River

Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

**2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING**

**S. MEANDER ARMORING
CONSTRUCTION PLAN**

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
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13. Bank Stabilization

Bank stabilization activities necessary for erosion control or prevention, such as vegetative stabilization, bioengineering, sills, rip rap, revetment, gabion baskets, stream barbs, and bulkheads, or combinations of bank stabilization techniques, provided the activity meets all of the following criteria:

- (a) No material is placed in excess of the minimum needed for erosion protection;
- (b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a bulkhead that is greater than 1,000 feet in length along the bank);
- (c) The activity will not exceed an average of one cubic yard per running foot, as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects;
- (e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;
- (f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas);
- (g) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization;
- (h) The activity is not a stream channelization activity; and
- (i) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This NWP authorizes those maintenance and repair activities if they require authorization.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. Appropriate

measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges of dredged or fill material into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of dredged or fill material of greater than an average of one cubic yard per running foot as measured along the length of the treated bank, below the plane of the ordinary high water mark or the high tide line. (See general condition 32.) (Authorities: Sections 10 and 404)

Note: In coastal waters and the Great Lakes, living shorelines may be an appropriate option for bank stabilization, and may be authorized by NWP 54.

2021 Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. *Navigation.* (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. *Aquatic Life Movements.* No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. *Spawning Areas.* Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. *Migratory Bird Breeding Areas.* Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

2021 Nationwide Permit General Conditions

5. *Shellfish Beds.* No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. *Suitable Material.* No activity may use unsuitable material (*e.g.*, trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. *Water Supply Intakes.* No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. *Adverse Effects From Impoundments.* If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. *Management of Water Flows.* To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (*e.g.*, stream restoration or relocation activities).

10. *Fills Within 100-Year Floodplains.* The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. *Equipment.* Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. *Soil Erosion and Sediment Controls.* Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. *Removal of Temporary Structures and Fills.* Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate.

2021 Nationwide Permit General Conditions

14. *Proper Maintenance.* Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. *Single and Complete Project.* The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. *Wild and Scenic Rivers.* (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. *Tribal Rights.* No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. *Endangered Species.* (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”

2021 Nationwide Permit General Conditions

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (*e.g.*, an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The

2021 Nationwide Permit General Conditions

word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. *Migratory Birds and Bald and Golden Eagles.* The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. *Historic Properties.* (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If preconstruction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance

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with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the preconstruction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

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(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/ THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. *Discovery of Previously Unknown Remains and Artifacts.* Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. *Designated Critical Resource Waters.* Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

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23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (*i.e.*, on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require preconstruction notification, the district engineer may determine on a case-by case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100 acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100 acre or less that require preconstruction notification, the district engineer may determine on a case-by case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the

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stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

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(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (*e.g.*, resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. *Safety of Impoundment Structures.* To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. *Water Quality.* (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived

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(see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires preconstruction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3 acre.

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(b) If one or more of the NWP's used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWP's cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2 acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. *Transfer of Nationwide Permit Verifications.* If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. *Compliance Certification.* Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

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(c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. *Activities Affecting Structures or Works Built by the United States.* If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. *Pre-Construction Notification.* (a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer’s receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is “no effect” on listed species or “no potential to cause effects” on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the

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permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification:* The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed activity;
- (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
- (4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. (ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs. (iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);
- (5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project

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site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

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(c) *Form of Pre-Construction Notification:* The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination:* (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the preconstruction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat

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conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of preconstruction notifications to expedite agency coordination.

ALASKA DISTRICT REGIONAL CONDITIONS
for the
2021 NATIONWIDE PERMITS (NWP)

The Alaska District Regulatory Office has issued the following Regional Conditions to ensure that activities authorized by NWPs in the Alaska District cause no more than minimal adverse environmental effects, individually and cumulatively. Before the Alaska District will verify an activity under one or more NWPs, the proposed activity must comply with the NWP terms and all applicable General and Regional Conditions.

APPLICABILITY: The following apply throughout the state of Alaska.

RESTRICTIONS:

Regional Condition A – Revoked Permits: The following NWPs are revoked within Alaska:

- 2. Structures in Artificial Canals
- 24. Indian Tribe or State Administered Section 404 Programs
- 30. Moist Soil Management for Wildlife
- 34. Cranberry Production Activities

Regional Condition B – Additional Pre-Construction Notification (PCN) Requirements

1. NWP 13, Bank Stabilization: In addition to the PCN requirements specified by NWP 13, a PCN is required for proposed bank stabilization projects in fresh water when the proposed methods and techniques are not included in the Streambank Revegetation and Protection: A Guide for Alaska Revised 2005 (Walter, Hughes and Moore, April 2005) (Guide) or its future revisions. The Guide is available at: <http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.main>.
2. A PCN is required for projects that qualify for NWPs 12, 57 (C), and 58 (D) within the Municipality of Anchorage.
3. NWP 48: A PCN is required for impacts to greater than 1/2 acre of special aquatic sites (wetlands, mudflats, vegetated shallows, coral reefs, etc.).
4. NWP 12, 57 (C), 58 (D). In addition to other triggers for the PCN, a PCN is required for projects located within permafrost soils identified using the appropriate soil survey or other appropriate data.

REGIONAL CONDITION C - Activities Involving Trenching

Trenches may not be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation.

Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non waters of the U.S. location. The backfilled trench shall achieve the pre-construction elevation, within a year of disturbance unless climatic conditions warrant additional time. The additional time must be approved by the Corps.

Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable.

REGIONAL CONDITION D - Site Revegetation for Projects with Ground Disturbing Activities

Re-vegetation of all disturbed areas within the project site shall begin as soon as site conditions allow and in the same growing season as the disturbance, unless climatic conditions warrant additional time. Topsoil (the outermost layer of soil, usually the top 2 – 8 inches) removed from the

construction area shall be separated and used for site rehabilitation. When backfilling, topsoil shall be placed as the top layer to provide a seed bed for regrowth. If topsoil is not available from the project site, local native soil material obtained from an approved site may be used. Species used for seeding and planting shall be certified seed sources free of invasive species and follow this order of preference: 1) species native to the site; 2) species native to the region; 3) species native to the state.

REGIONAL CONDITION E - Delineation of Project Footprint

Prior to commencement of construction activities within waters of the U.S., the permittee shall clearly identify the permitted limits of disturbance at the project site with highly visible markers (e.g. construction fencing, flagging, silt barriers, etc.). The permittee shall properly maintain such identification until construction is complete and the soils have been stabilized. The permittee is prohibited from conducting any unauthorized Corps-regulated activity outside of the permitted limits of disturbance (as shown on the permit drawings).

REGIONAL CONDITION F - Maintenance of Hydrology Patterns

Natural drainage patterns shall be maintained using appropriate methods. Excessive ponding or drying adjacent to fill areas shall indicate non-compliance with this condition.

REGIONAL CONDITIONS G, H, I AND J APPLY TO SPECIFIC NWPs

REGIONAL CONDITION G - NWP 40 Agricultural Activities

The following activities are not authorized by NWP 40: a. Installation, placement, or construction of drain tiles, ditches, or levees; and b. Mechanized land clearing or land leveling in wetlands within 300 feet of an anadromous water (anadromous water is defined by the state of AK see <https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive>).

REGIONAL CONDITION H - NWP 44 Mining Activities

Placer mining activities are excluded from coverage by NWP 44 (Mining Activities). Placer mining may be authorized by Regional General Permit POA-2014-00055-M1. In Alaska, NWP 44 may only authorize the following activities:

1. Hard rock mining within waters jurisdictional under only Section 404 of the Clean Water Act, not including trenching, drilling, or access road construction.
2. Temporary stockpiling of sand and gravel in waters of the U.S., limited to seasonally dewatered unvegetated sand/gravel bars. Stockpiles shall be completely removed and the area restored to pre-project contours within one year, in advance of seasonal ordinary high water events, or prior to equipment being removed from site, whichever occurs first.

REGIONAL CONDITION I – NWP 48, 55 (A), and 56 (B):

When an Aquatic Farm Lease is required from the Alaska Department of Natural Resources (ADNR) for a new or modified aquatic farm, the applicant must obtain and submit a copy of the ADNR preliminary decision with a Preconstruction Notification to the USACE.

REGIONAL CONDITION J – NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52:

The proposed NWP activity must not cause:

- 1) the loss of anadromous streambed, and/or
 - 2) the discharge of dredged or fill material into waterbodies, including wetlands, adjacent to and/or upstream of an anadromous waterbody;
- unless the district engineer issues a waiver by making a written determination concluding that these discharges will result in no more than minimal individual and cumulative adverse environmental effects.

**STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER**

Southeast Regional Land Office

ADL 109422

City and Borough of Juneau

Authorization for Development within an Existing Easement

AS 38.05.850

The Department of Natural Resources, Division of Mining, Land and Water (DNR-DMLW), herein known as Grantor, authorizes the City and Borough of Juneau (CBJ), herein known as Grantee, for development within the following state managed easement: ADL 109338.

Property Description:

Located along the Mendenhall River in Juneau, Alaska, on portions of DMLW-managed state land within the NW $\frac{1}{4}$ and SW $\frac{1}{4}$ of Section 19, Township 40 South, Range 66 East and the SE $\frac{1}{4}$ of Section 24, Township 40 South, Range 65 East, Copper River Meridian.

Background:

On August 5, 2023, a glacial outburst originating in Suicide Basin caused sudden, severe flooding of the Mendenhall River in Juneau, Alaska. On August 9, 2023, in response to the damage caused by the flooding, the Governor's Office issued a 30-day Emergency Declaration suspending Alaska statute and regulation-related provisions requiring authorization prior to the use of, or entry upon, state land under AS 26.23.020(g)(1) and (7). On September 8, 2023, the Department of Mining, Land and Water, Southeast Regional Office (DMLW-SERO) issued Regional Manager's Decision (RMD) ADL 109338. The decision granted a public easement in perpetuity on state land underlying the Mendenhall River to encompass subsequent revetment construction and erosion control activity.

On August 6, 2024, a second glacial outburst originating in Suicide Basin caused flooding along the Mendenhall River. In response to the damage caused by the flooding, the Governor's Office issued a 30-day Emergency Declaration the same day, August 6, 2024. On September 5, 2024, DMLW-SERO issued an amendment to RMD ADL 109338 consistent with the August 6, 2024, Emergency Declaration.

On February 18, 2025, CBJ submitted an application to DMLW-SERO, serialized as ADL 109422, requesting authorization for revetment construction and erosion control work within public easement ADL 109338 along the Mendenhall River.

Authorization:

Revetment construction, erosion control and mitigation activity, at three sites on state-owned land along the east bank of the Mendenhall River. The site-locations are identified as: Killewich Drive, North Meander Way, and South Meander Way. Construction consists of riverbank slope excavation, river bottom scouring, and installation of Class III riprap armor and filter rock to an

approximate thickness of five feet. The total length and volume of construction is estimated at 1,085 feet and 8,500 cubic yards. See Attachment 1 for the approved development diagram. Construction should follow the submitted plan and should any changes be made, DMLW-SERO should be notified immediately.

Approximate length and volume of construction at the site adjacent to Killewich Drive is estimated at 500 feet and 4,950 cubic yards. Approximate length and volume of construction at the site adjacent to North Meander Way is estimated at 250 feet and 1,540 cubic yards. Approximate length and volume of construction at the site adjacent to South Meander Way is estimated at 250 feet and 2,000 cubic yards.

This authorization does not create or convey a real property interest and as such is revocable, with or without cause. The term of this authorization corresponds to the term of state managed easement, ADL 109338, which is issued in perpetuity.

Correspondence concerning this authorization may be directed to the Department of Natural Resources, Division of Mining, Land and Water, Southeast Regional Office, P.O. Box 111020, Juneau, AK 99801-1020, (907) 465-3400.

I have read and understand all of the foregoing and attached stipulations. By signing this authorization, I agree to conduct the authorized activity in accordance with the terms and conditions of this authorization.

<u>John Bohan</u>	City Engineer	March 13, 2025	
Signature of Grantee or Authorized Representative	Title	Date	
<u>155 Heritage Way, Juneau AK 99801</u>			
Grantee's Address	City	State	Zip
<u>John Bohan - (907)586-0800 x-4188</u>			
Contact Person	Primary Phone	Alternate Phone	
<u>Mason Auger</u>	Natural Resource Manager II	3/13/2025	
Signature of Authorized State Representative	Title	Date	

Appeal

An eligible person affected by this decision may appeal to the DNR Commissioner per AS 44.37.011 and 11 AAC 02. Any appeal must be received within twenty (20) calendar days after issuance of this decision under 11 AAC 02.040. An eligible person must first appeal a decision to the Commissioner before seeking relief in superior court. The Alaska Court System establishes its own rules for timely appealing final administrative orders and decisions of the department.

Appeals may be mailed or hand-delivered to the DNR Commissioner's Office, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska, 99501; or faxed to (907)-269-8918; or sent by electronic mail to dnr.appeals@alaska.gov. Appeals must be accompanied by the fee established in 11 AAC 05.160(d)(1)(F), which has been set at \$200 under the provisions of 11 AAC 05.160 (a)-(b). A copy of 11 AAC 02 is available on the department's website at <https://dnr.alaska.gov/mlw/pdf/DNR-11-AAC-02.pdf>.

ADL 109422
Stipulations

1. **Authorized Officer:** The Authorized Officer (AO) for the State of Alaska (State), Department of Natural Resources (DNR), Division of Mining, Land and Water (DMLW), is the Regional Manager or designee.
2. **Change of Contact Information:** The Grantee shall maintain current contact information with the AO. Any change of contact information must be submitted in writing to the AO.
3. **Development Plan:** Development shall be limited to the authorized area and improvements specified in the approved development plan or subsequent modifications approved by the AO. The Grantee is responsible for accurately siting development and operations within the authorized area. Any proposed revisions to the development plan must be approved in writing by the AO before the change in use or development occurs.
4. **Survey:** The Grantee is required to contact DMLW Survey Section regarding development construction no less than one week upon signing of this authorization. Additional requirements may be required by the DMLW Survey Section prior to construction.
5. **Directives:** Directives may be issued for corrective actions that are required to correct a deviation from design criteria, project specifications, stipulations, State statutes or regulations. Work at the area subject to the Directive may continue while implementing the corrective action. Corrective action may include halting or avoiding specific conduct, implementing alternative measures, repairing any damage to state resources that may have resulted from the conduct, or other action as determined by DNR.
6. **Violations:** A violation of this authorization is subject to any action available to the State for enforcement and remedies, including revocation of the authorization, civil action for forcible entry and detainer, ejectment, trespass, damages, and associated costs, or arrest and prosecution for criminal trespass in the second degree. The State may seek damages available under a civil action, including restoration damages, compensatory damages, and treble damages under AS 09.45.730 or AS 09.45.735 for violations involving injuring or removing trees or shrubs, gathering geotechnical data, or taking mineral resources.
7. **Public Access:** The construction, operation, use, and maintenance of the authorized area shall not interfere with public use of roads, trails, waters, landing areas, and public access easements. The ability to use or access state land or public waters may not be restricted in any manner. However, if a specific activity poses a safety concern, the AO may allow the

restriction of public access for a specific period of time. The Grantee is required to contact the AO in advance for approval. No restriction is allowed unless specifically authorized in writing by the AO.

- 8. Public Trust Doctrine:** The Public Trust Doctrine guarantees public access to, and the public right to use, navigable and public waters and the land beneath them for navigation, commerce, fishing, and other purposes. This authorization is subject to the principles of the Public Trust Doctrine regarding navigable or public waters. The AO reserves the right to grant other interests consistent with the Public Trust Doctrine.
- 9. Valid Existing Rights:** This authorization is subject to all valid existing rights and reservations in and to the authorized area. The State makes no representations or warranties, whatsoever, either expressed or implied, as to the existence, number, or nature of such valid existing rights.
- 10. Site Maintenance:** The authorized area shall be maintained in a neat, clean, and safe condition, free of any solid waste, debris, or litter, except as specifically authorized herein. Nothing may be stored that would be an attractive nuisance to wildlife or create a potentially hazardous situation.
- 11. Maintenance of Improvements:** The Grantor is not responsible for maintenance of authorized improvements or liable for injuries or damages related to those improvements. No action or inaction of the Grantor is to be construed as assumption of responsibility.
- 12. Removal of Improvements and Site Restoration:** Upon termination of this authorization, whether by abandonment, revocation or any other means, the Grantee shall within 30 days remove all improvements from the area herein granted, except those owned by the State, and the site shall be restored to a condition acceptable to the AO. Should the Grantee fail or refuse to remove said structures or improvements within the time allotted, they shall revert to and become the property of the State; however, the Grantee shall not be relieved of the cost of the removal of the structures, improvements and/or the cost of restoring the area.
- 13. Amendment or Modification:** The Grantee may request an amendment or modification of this authorization; the Grantee's request must be in writing. Any amendment or modification must be approved by the AO in advance and may require additional fees and changes to the terms of this authorization.
- 14. Assignment:** This authorization may not be transferred or assigned.
- 15. Request for Information:** The AO, at any time, may require the Grantee to provide any information directly or indirectly related to this authorization, in a manner prescribed by the AO.

16. Inspections: The AO shall have reasonable access to the authorized area for inspection, which may be conducted without prior notice. If the Grantee is found to be in noncompliance the authorized area may be subject to reinspection. The Grantee may be charged for actual expenses of any inspection.

17. Waste Disposal: On-site refuse disposal is prohibited, unless specifically authorized. All waste generated during operation, maintenance, and termination activities under this authorization shall be removed and disposed of at an off-site DEC approved disposal facility. Waste, in this paragraph, means all discarded matter, including but not limited to human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and discarded equipment.

18. Surface Drainage: Adequate culverts shall be installed to maintain surface drainage and to prevent ponding and/or erosion.

19. Site Disturbance:

- a. Site disturbance shall be kept to a minimum to protect local habitats. All activities at the site shall be conducted in a manner that will minimize the disturbance of soil and vegetation and changes in the character of natural drainage systems.
- b. Brush clearing is allowed but shall be kept to the minimum necessary to conduct or complete the authorized activity. Removal or destruction of the vegetative mat outside of the authorized area is not allowed.
- c. Establishment of, or improvements to, tidal, submerged, shoreland or riparian landing areas (e.g.: leveling the ground, bank cutting or removing or modifying a substantial amount of vegetation) is prohibited without the prior written consent of the AO.
- d. The Grantee shall conduct all operations in a manner which will prevent unwarranted pollution, erosion, and siltation. Any pollution, erosion, or siltation shall be repaired/remediated in a manner and time frame satisfactory to the AO at the Grantee's expense.

20. Ground Disturbance and Repair: Grantee will refill holes, trenches and surface depressions resulting from development or maintenance activities with sand, gravel, native materials, or a substitute approved by the AO. Surface areas will be recontoured to the satisfaction of the AO so that they do not pose a threat to human safety or wildlife transit.

21. Destruction of Markers: The Grantee shall protect all survey monuments, witness corners, reference monuments, mining claim posts, bearing trees, and unsurveyed corner posts against damage, destruction, or obliteration. The Grantee shall notify the AO of any damaged, destroyed, or obliterated markers and shall reestablish the markers at the Grantee's expense in accordance with accepted survey practices of the DMLW.

22. Insurance: In accordance with 11 AAC 96.065, the requirements for insurance are met by the self-insurance of the applicant, as a political subdivision of the State. DMLW reserves the right to request insurance during the term of this authorization.

- 23. Incurred Expenses:** The Grantor shall in no way be held liable for expenses incurred by the Grantee connected with the activities directly or indirectly related to this authorization.
- 24. In Lieu of Indemnification:** In connection with the entry on or use of lands, subject to the limitations and provisions of AS 09.50.250-.270 and AS 37.05.170, the Grantee shall ensure that its contractors and subcontractors shall indemnify, save harmless, and defend the State, its agents and its employees from any and all claims or actions for injuries or damages sustained by any person or property arising directly or indirectly from the construction or the contractor's performance of the contract, except when the proximate cause of the injury or damage is the State's sole negligence.
- 25. Preference Right:** No preference right for subsequent authorizations are granted or implied by this authorization.
- 26. Alaska Historic Preservation Act:** The Alaska Historic Preservation Act, AS 41.35.200, prohibits the appropriation, excavation, removal, injury, or destruction of any state owned historic, prehistoric, archaeological or paleontological site without written approval from the DNR Commissioner. Should any sites be discovered, the Grantee shall cease any activities that may cause damage and immediately contact the AO and the Office of History and Archaeology in the Division of Parks and Recreation.
- 27. Compliance with Government Requirements:** The Grantee shall, at its expense, comply with all federal, state, and local laws, regulations, and ordinances directly or indirectly related to this authorization. The Grantee shall ensure compliance by its employees, agents, contractors, subcontractors, licensees, or invitees.
- 28. Waiver of Forbearance:** Any failure on the part of the AO to enforce the terms of this authorization, or the waiver of any right under this authorization by the Grantee, unless in writing, shall not discharge or invalidate the authorization of such terms. No forbearance or written waiver affects the right of the AO to enforce any terms in the event of any subsequent violations of terms of this authorization.
- 29. Severability Clause:** If any clause or provision of this authorization is, in a final judicial proceeding, determined illegal, invalid, or unenforceable under present or future laws, then the Grantor and the Grantee agree that the remainder of this authorization will not be affected, and in lieu of each clause or provision of this authorization that is illegal, invalid, or unenforceable, there will be added as a part of this authorization a clause or provision as similar in terms to the illegal, invalid, or unenforceable clause or provision as may be possible, legal, valid, and enforceable.
- 30. Fire Prevention, Protection and Liability:** The Grantee shall take all reasonable precautions to prevent and suppress forest, structure, brush and grass fires, and shall assume full liability for any damage to state land and structures resulting from the negligent use of fire. The State is not liable for damage to the Grantee's personal property

and is not responsible for forest fire protection of the Grantee's activity. To report a wildfire, call 911 or 1-800-237-3633.

31. Notification of Discharge: The Grantee shall immediately notify the Department of Environmental Conservation (DEC) and AO of any unauthorized discharge of any amount of oil to water, a discharge of any amount of a hazardous substance (other than oil), and any discharge of oil greater than 55 gallons on land. All fires and explosions must also be reported immediately.

If a discharge, including a cumulative discharge, of oil is greater than 10 gallons but less than 55 gallons, or a discharge of oil greater than 55 gallons is made to an impermeable secondary containment area, the Grantee shall report the discharge within 48 hours. Any discharge of oil greater than one gallon up to 10 gallons, including a cumulative discharge, solely to land, must be reported in writing on a monthly basis.

Notification of discharge must be made to DEC online at ReportSpills.alaska.gov or by phone at 1-800-478-9300.

Notification of discharge must be made to the appropriate DNR Office, preferably by e-mail: Anchorage email dnr.scro.spill@alaska.gov, (907) 269-8528; Fairbanks email dnr.nro.spill@alaska.gov, (907) 451-2739; Juneau email dnr.sero.spill@alaska.gov, (907) 465-3513. The Grantee shall supply the AO with all incident reports submitted to DEC.

32. Fuel and Hazardous Substances: No fuel or hazardous substances may be stored on state land.

33. Forest Resources: Site preparation and development work such as clearing must be performed in a reasonable manner that is commensurate with the scope of your project. Any materials such as trees that are disturbed in the course of development are the property of the underlying landowner and should be handled according to the landowner's instructions.

34. Termination: The authorization remains in effect for the term issued, unless revoked sooner. The department will give 30 days' notice before revoking an authorization at will. A revocation for cause is effective immediately.

35. Other Authorizations: The issuance of this authorization does not alleviate the necessity of the Grantee to obtain authorizations required by other agencies for this activity.

Attachments:

1. Approved Development Diagram



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0020

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Frank and Mimi Mesdag
3847/3849 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39084 N, 134.58915 W

Dear Frank and Mimi Mesdag:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



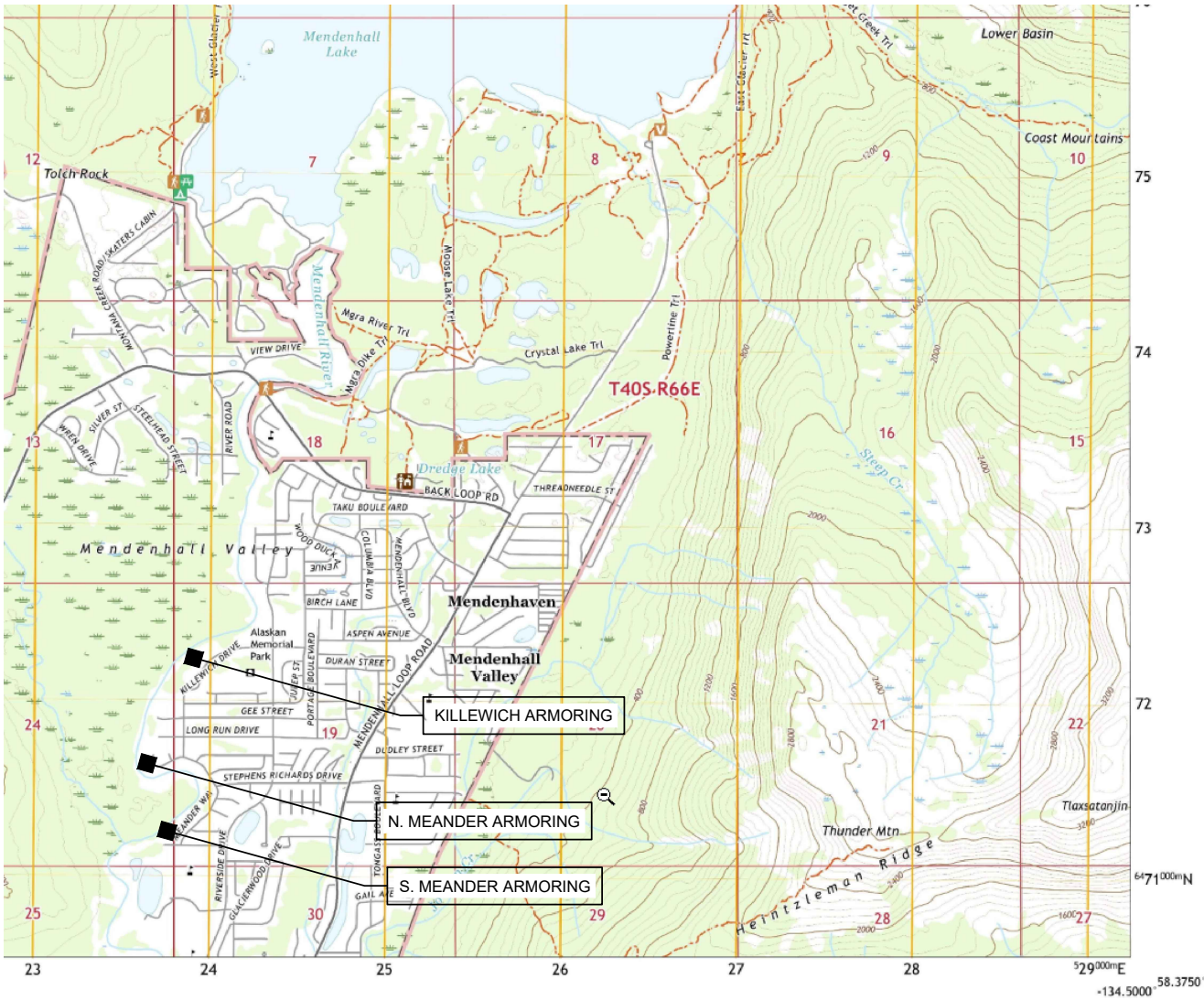
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

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3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
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5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.			DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown	

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) TOTAL RIPRAP VOLUME: 4,950 CY
 - 4) RIPRAP VOLUME BELOW OHW: 2210CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY

END ARMORING
BLEND INTO
EXISTING RIVERBANK

REDUCE SLOPE OF ARMORING
TO MATCH SHALLOWER
YARD SLOPE

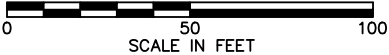
MENDENHALL RIVER

NEW RIVERBANK
ARMORING

BEGIN ARMORING
BLEND INTO EXISTING
BANK ARMORING

KILLEWICH DRIVE

- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

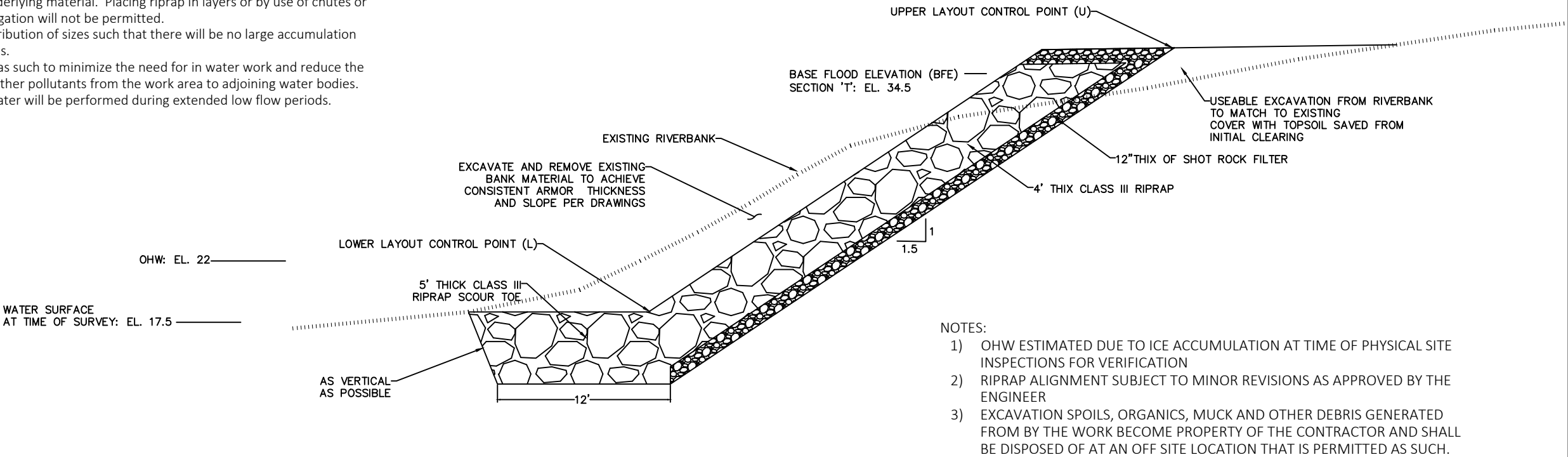
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
----------------	-----------------	-----------------

SHEET:

2 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0021

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Scott Gende and Amy Reifenstein
3843 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39066 N, 134.58962 W

Dear Scott Gende and Amy Reifenstein:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



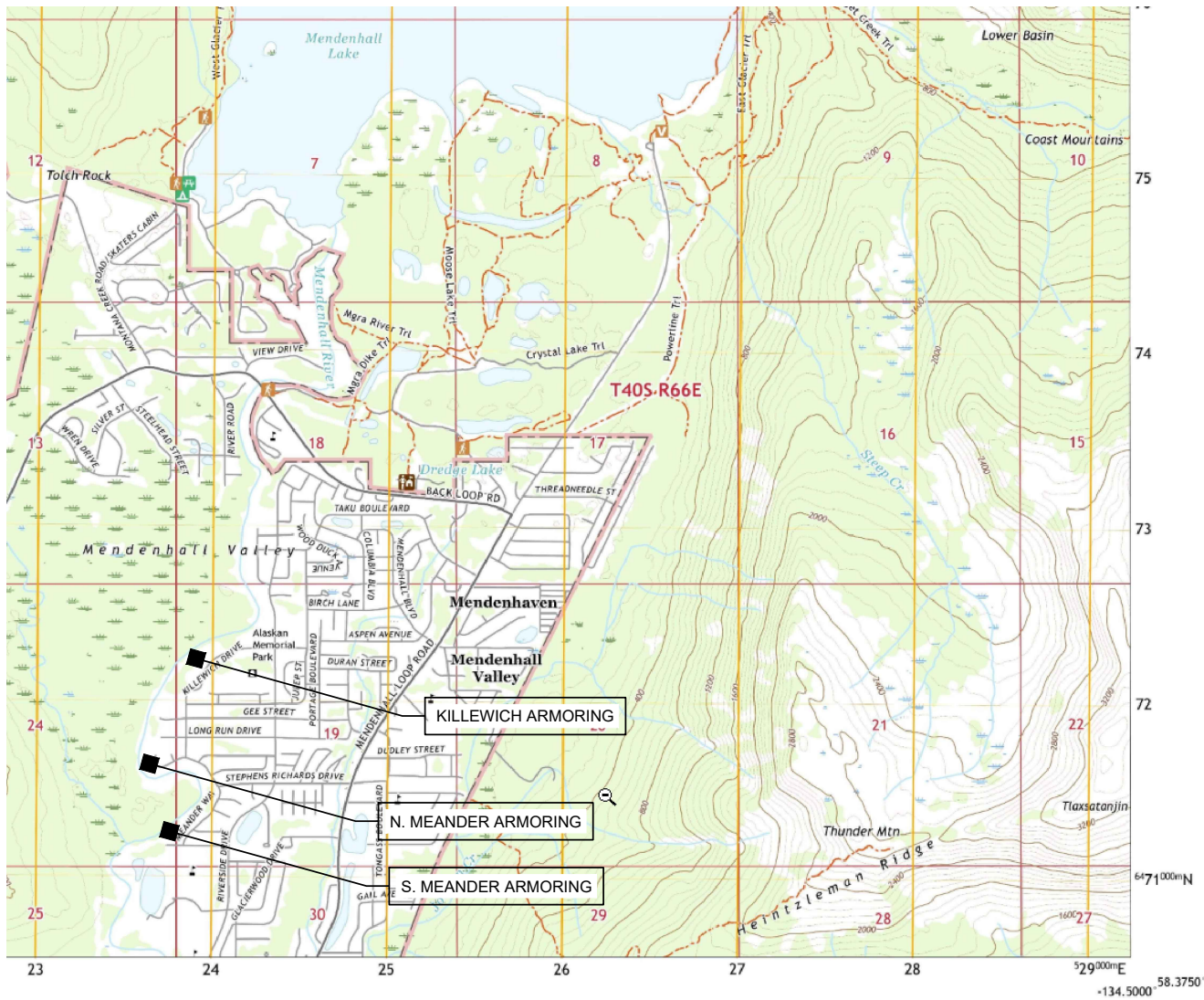
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
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Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

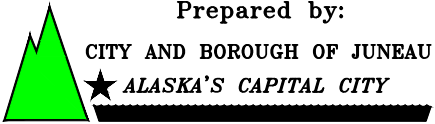
1	-	COVER AND LOCATION MAP
2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.			DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown	

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
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END ARMORING
BLEND INTO
EXISTING RIVERBANK

REDUCE SLOPE OF ARMORING
TO MATCH SHALLOWER
YARD SLOPE

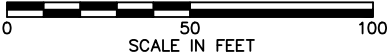
MENDENHALL RIVER

NEW RIVERBANK
ARMORING

BEGIN ARMORING
BLEND INTO EXISTING
BANK ARMORING

KILLEWICH DRIVE

- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
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 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

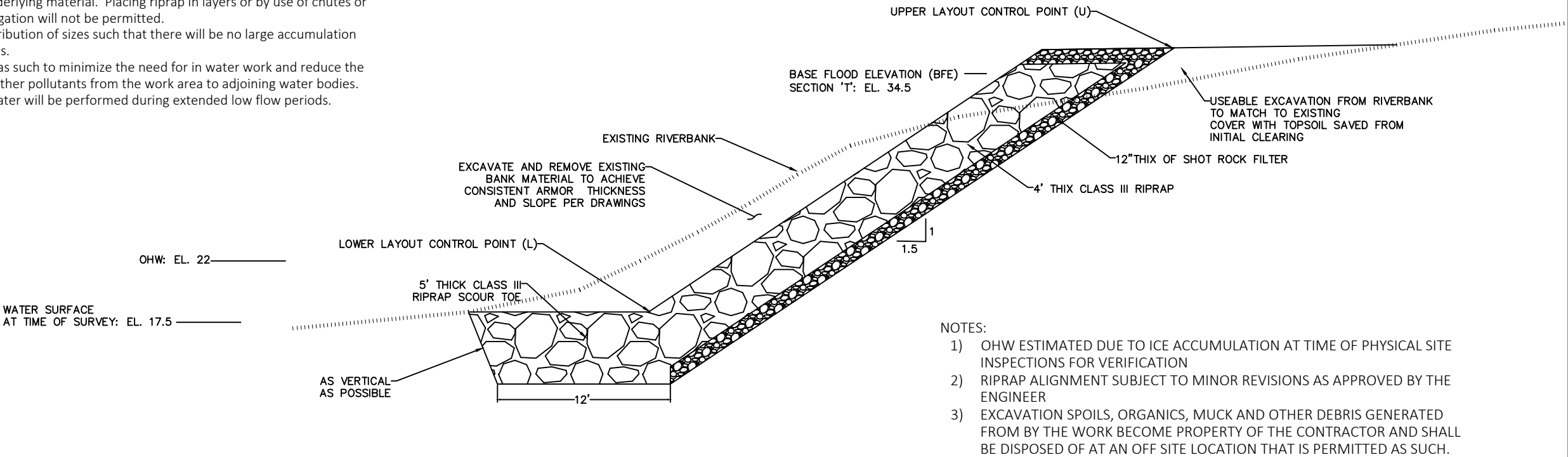
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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
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THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0022

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Jonathan and Brooke Gunstrom
3839 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39048 N, 134.59022 W

Dear Jonathan and Brook Gunstrom:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

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^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

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You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



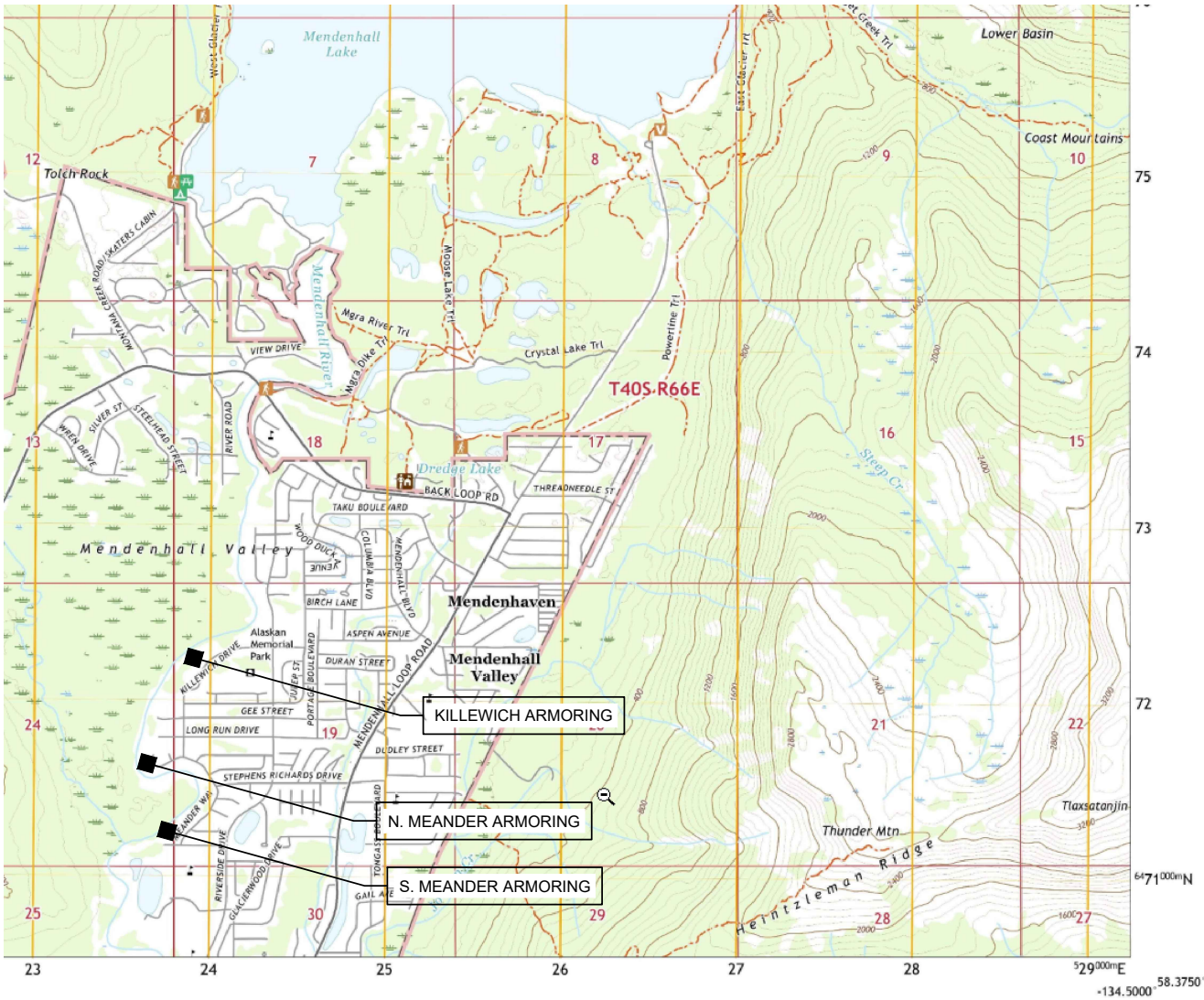
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

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ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
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PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

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Revisions		
Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

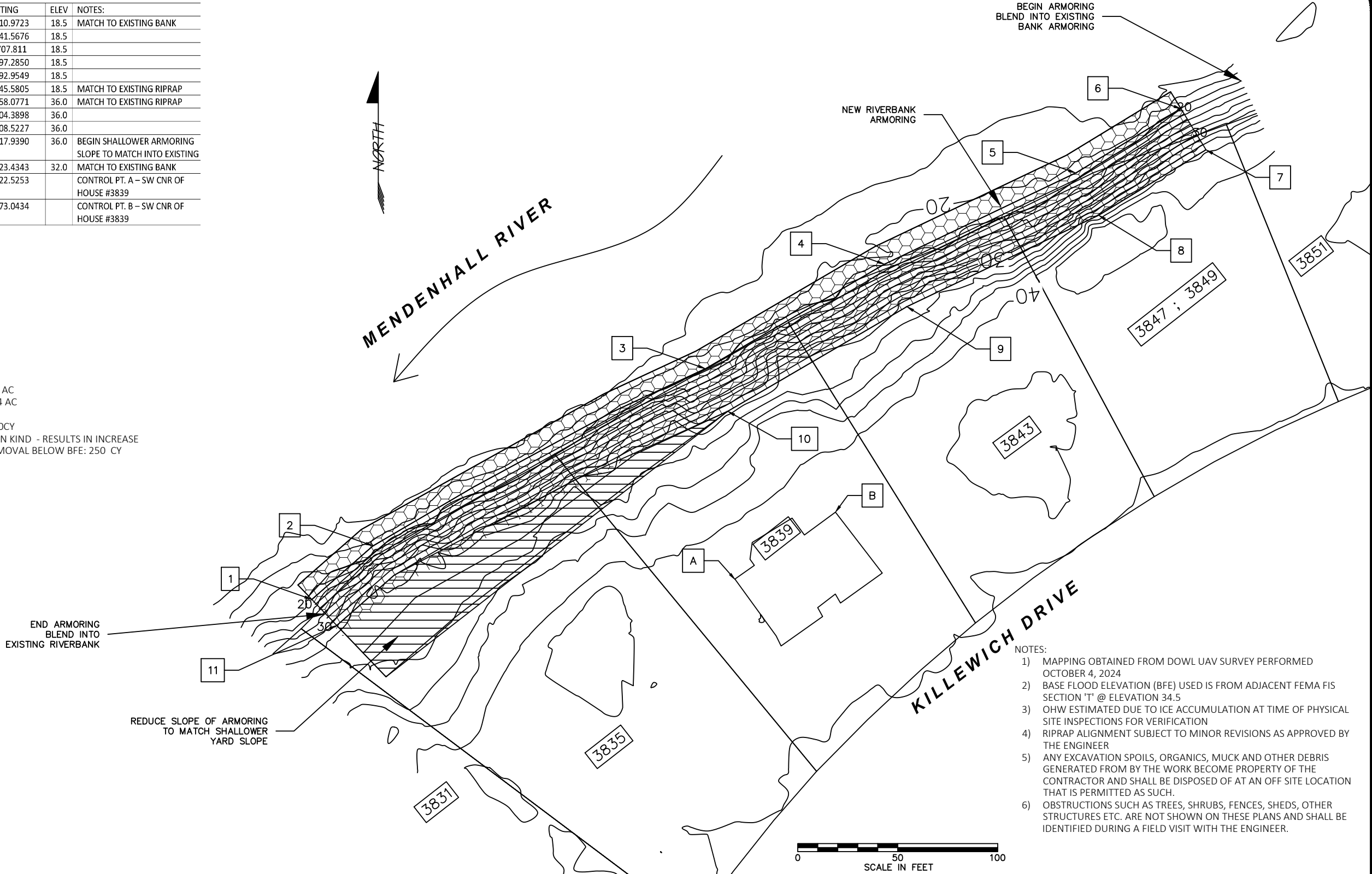
2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

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Revisions		
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Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

DESCRIPTION

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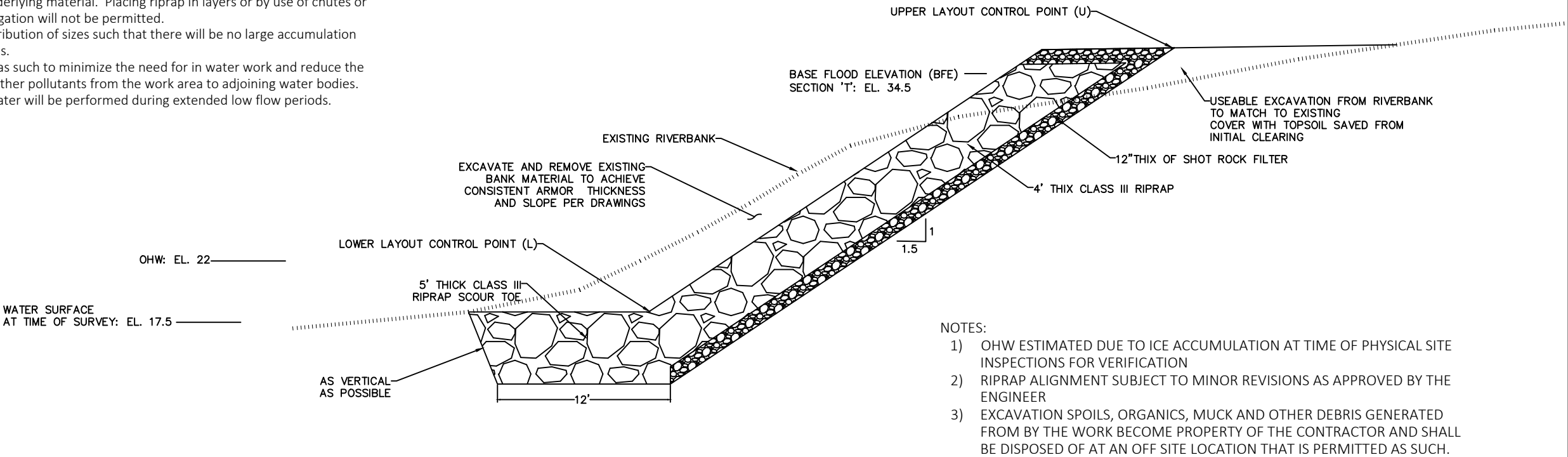
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KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
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THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0023

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Mike and Bonnie Erickson
3835 Killewich Drive
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.39028 N, 134.59075W

Dear Mike and Bonnie Erickson:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the active flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



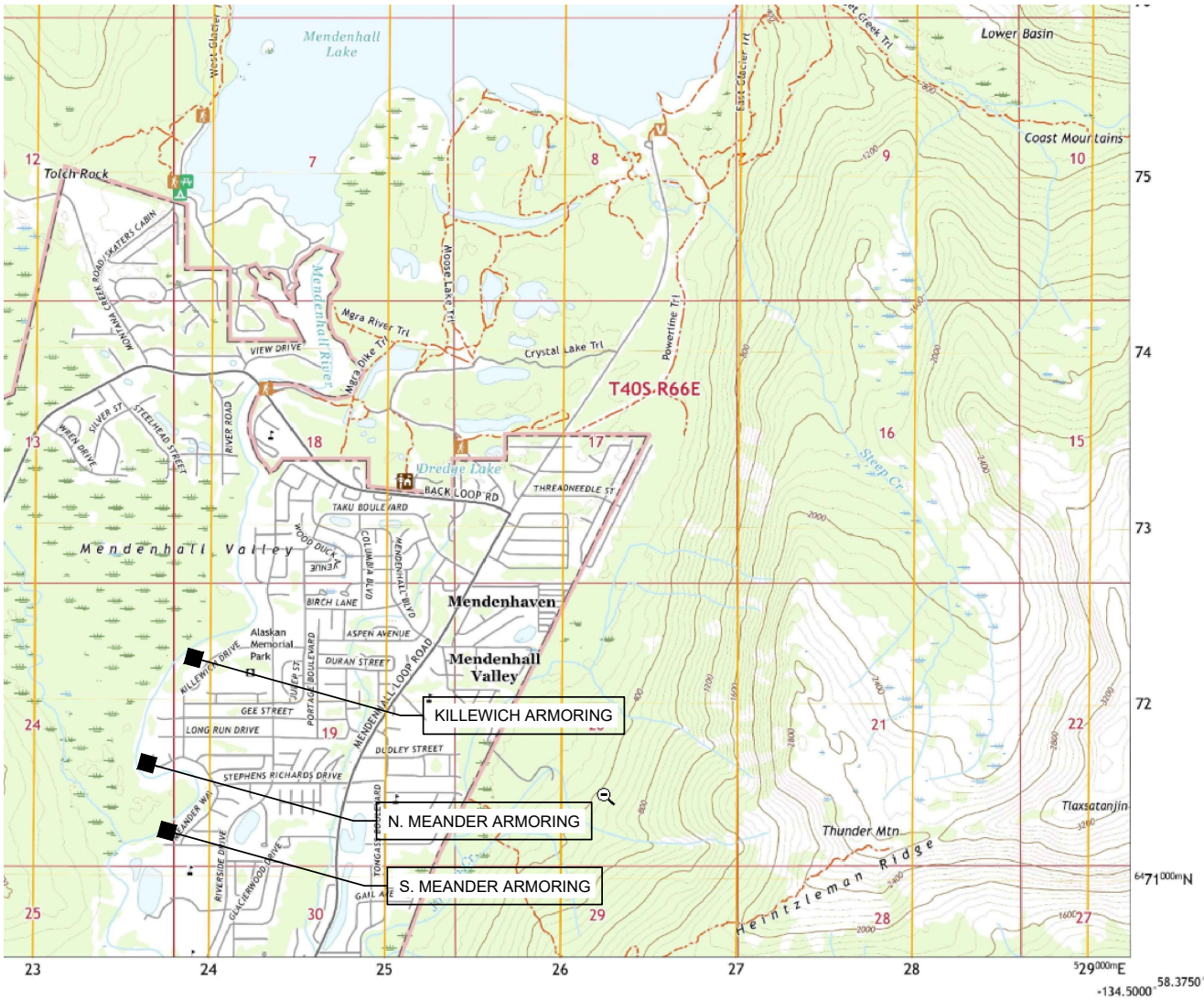
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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1	-	COVER AND LOCATION MAP
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3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	2395970.3710	2508510.9723	18.5	MATCH TO EXISTING BANK
2	2395997.1648	2508541.5676	18.5	
3	2396085.7665	2508707.811	18.5	
4	2396138.0306	2508797.2850	18.5	
5	2396183.6512	2508892.9549	18.5	
6	2396215.7526	2508945.5805	18.5	MATCH TO EXISTING RIPRAP
7	2396195.2627	2508958.0771	36.0	MATCH TO EXISTING RIPRAP
8	2396162.5192	2508904.3898	36.0	
9	2396116.8003	2508808.5227	36.0	
10	2396064.4721	2508717.9390	36.0	BEGIN SHALLOWER ARMORING SLOPE TO MATCH INTO EXISTING
11	2395957.3582	2508523.4343	32.0	MATCH TO EXISTING BANK
A	2395980.5465	2508722.5253		CONTROL PT. A – SW CNR OF HOUSE #3839
B	2396013.8097	2508773.0434		CONTROL PT. B – SW CNR OF HOUSE #3839

- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.46 AC
 - 2) BANK ARMORING BELOW OHW: 0.14 AC
 - 3) TOTAL RIPRAP VOLUME: 4,950 CY
 - 4) RIPRAP VOLUME BELOW OHW: 2210CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 250 CY

END ARMORING
BLEND INTO
EXISTING RIVERBANK

REDUCE SLOPE OF ARMORING
TO MATCH SHALLOWER
YARD SLOPE

MENDENHALL RIVER

NEW RIVERBANK
ARMORING

BEGIN ARMORING
BLEND INTO EXISTING
BANK ARMORING

KILLEWICH DRIVE

- NOTES:
- 1) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 2) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'T' @ ELEVATION 34.5
 - 3) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 4) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 5) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 6) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

CONSTRUCTION PLAN

DATE: 2/1/2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

3 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

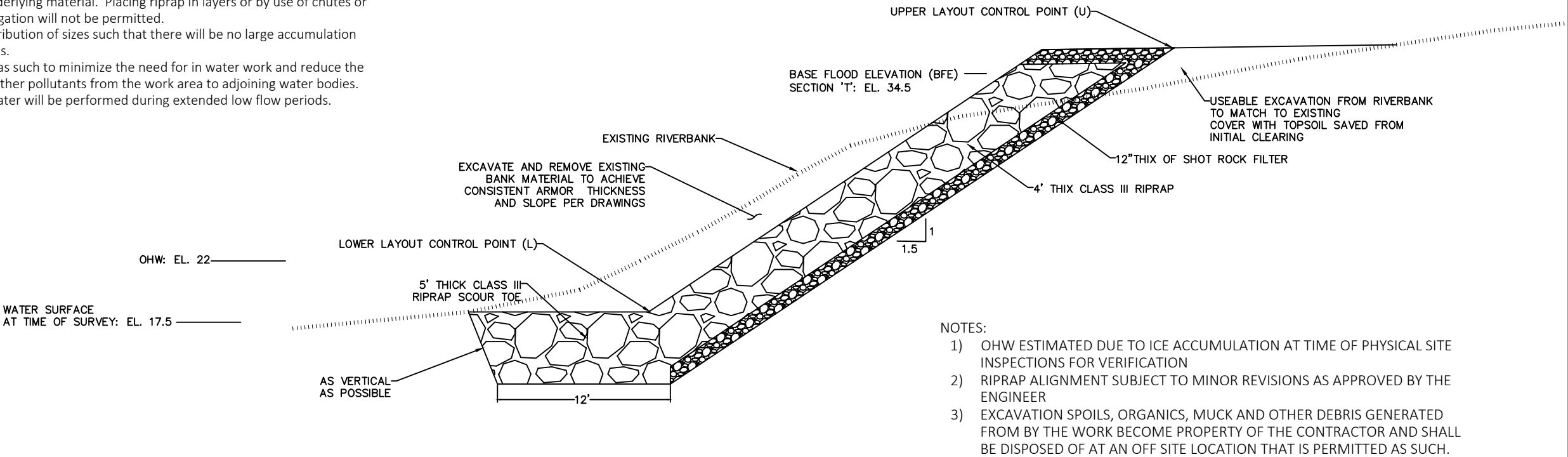
MATERIALS

SHOT ROCK BORROW: shall consist of 10” minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8” screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

KILLEWICH ARMORING

TYPICAL SECTION

DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown
----------------	-----------------	-----------------



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0026

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Brian and Kimberly Goettler
3323 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38179 N, 134.59197 W

Dear Brian and Kimberly Goettler:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

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You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



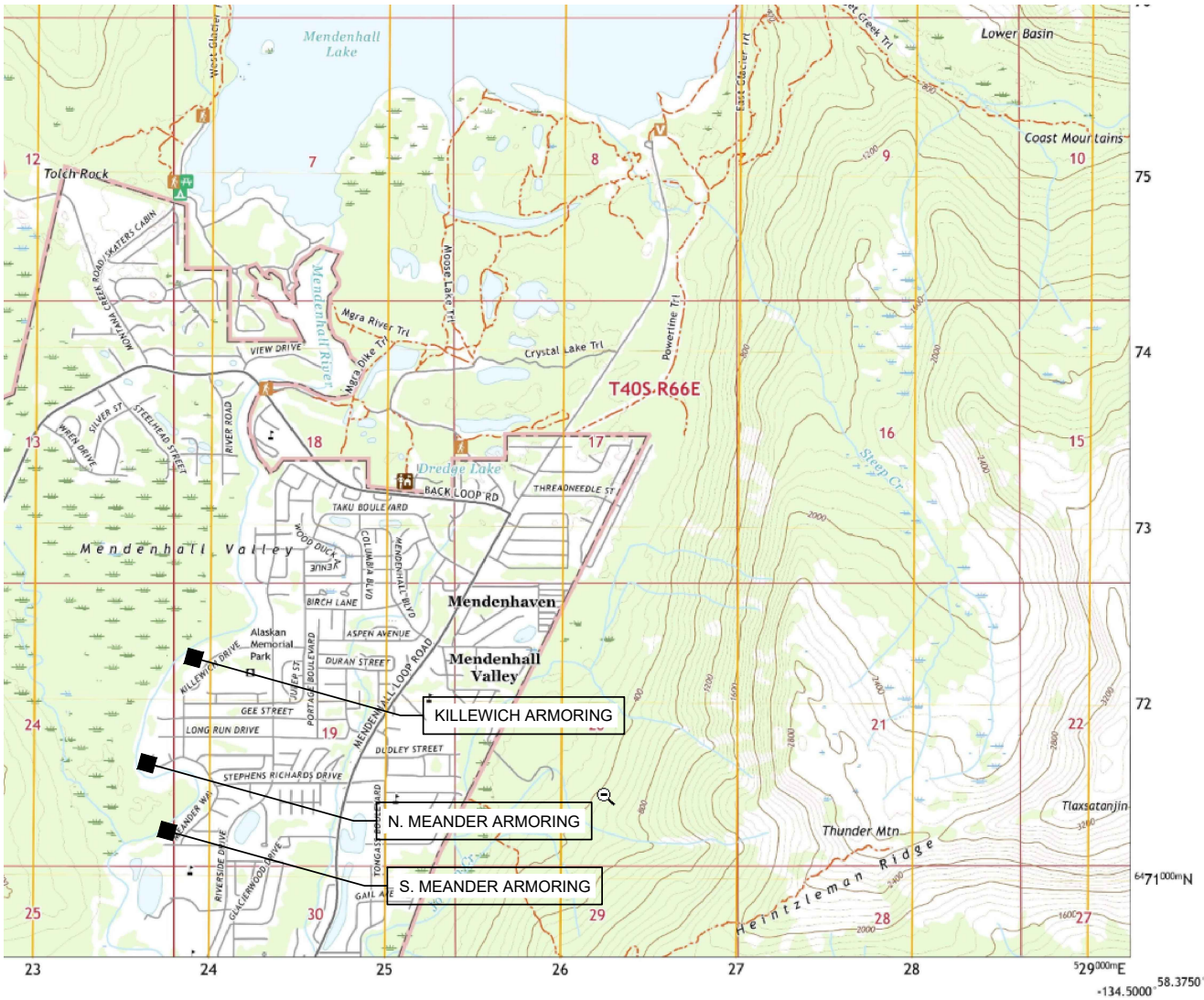
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

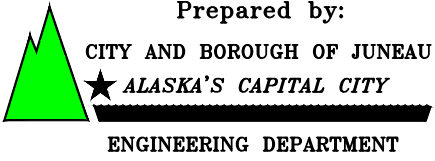
1	-	COVER AND LOCATION MAP
2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

PROJECT CONTACT:

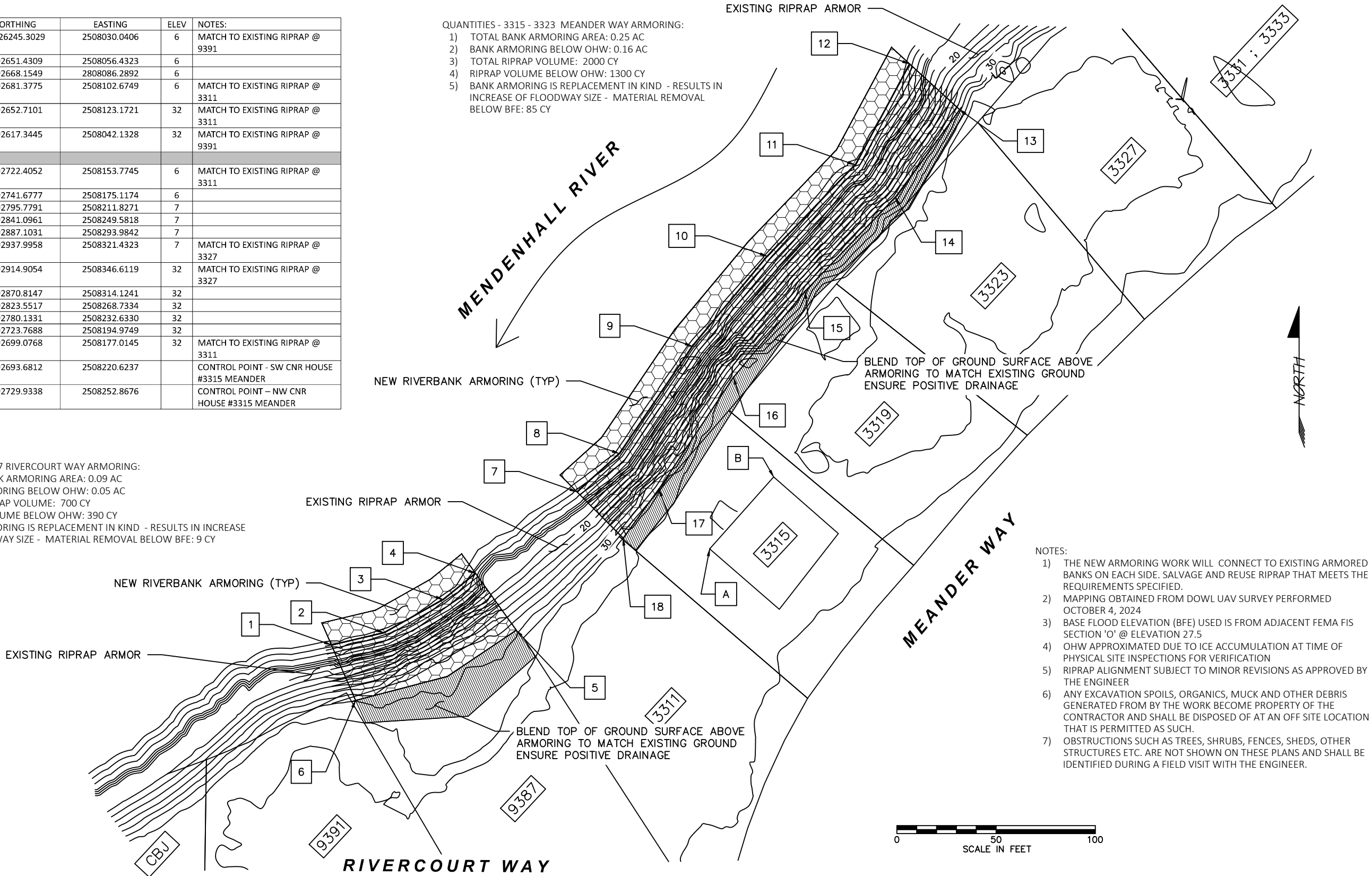
CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.			DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown	

POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) TOTAL RIPRAP VOLUME: 700 CY
 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) TOTAL RIPRAP VOLUME: 2000 CY
 - 4) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

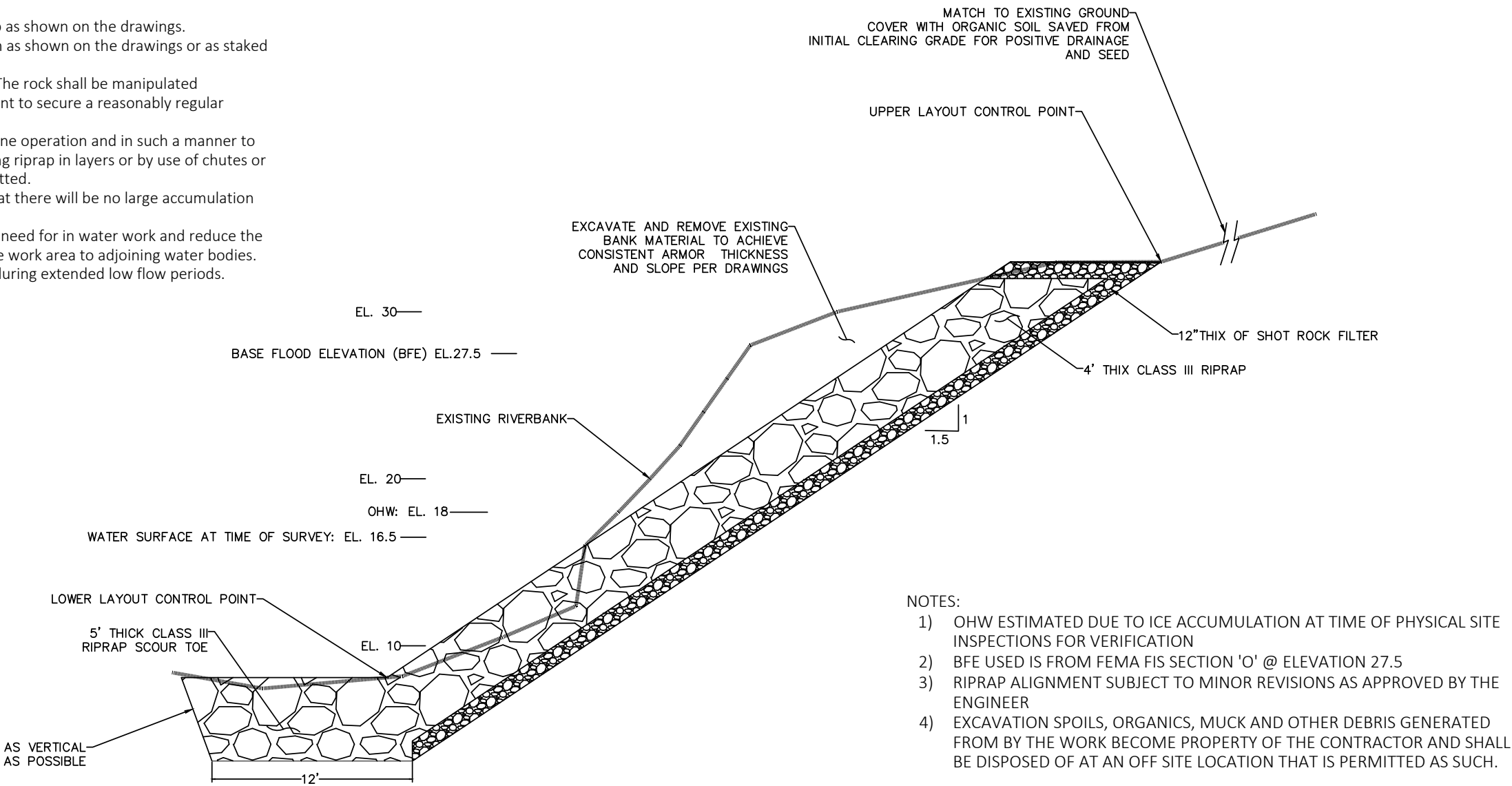
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
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- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) BFE USED IS FROM FEMA FIS SECTION 'O' @ ELEVATION 27.5
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 - 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0025

ISSUED: March 11, 2025
EXPIRES: Life of Structure

John and Alyson Cooper
3495 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 24, T 40S, R 65E, CRM (Juneau B-2)
Location: 58.38478 N, 134.59575 W

Dear John and Alyson Cooper:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify the Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



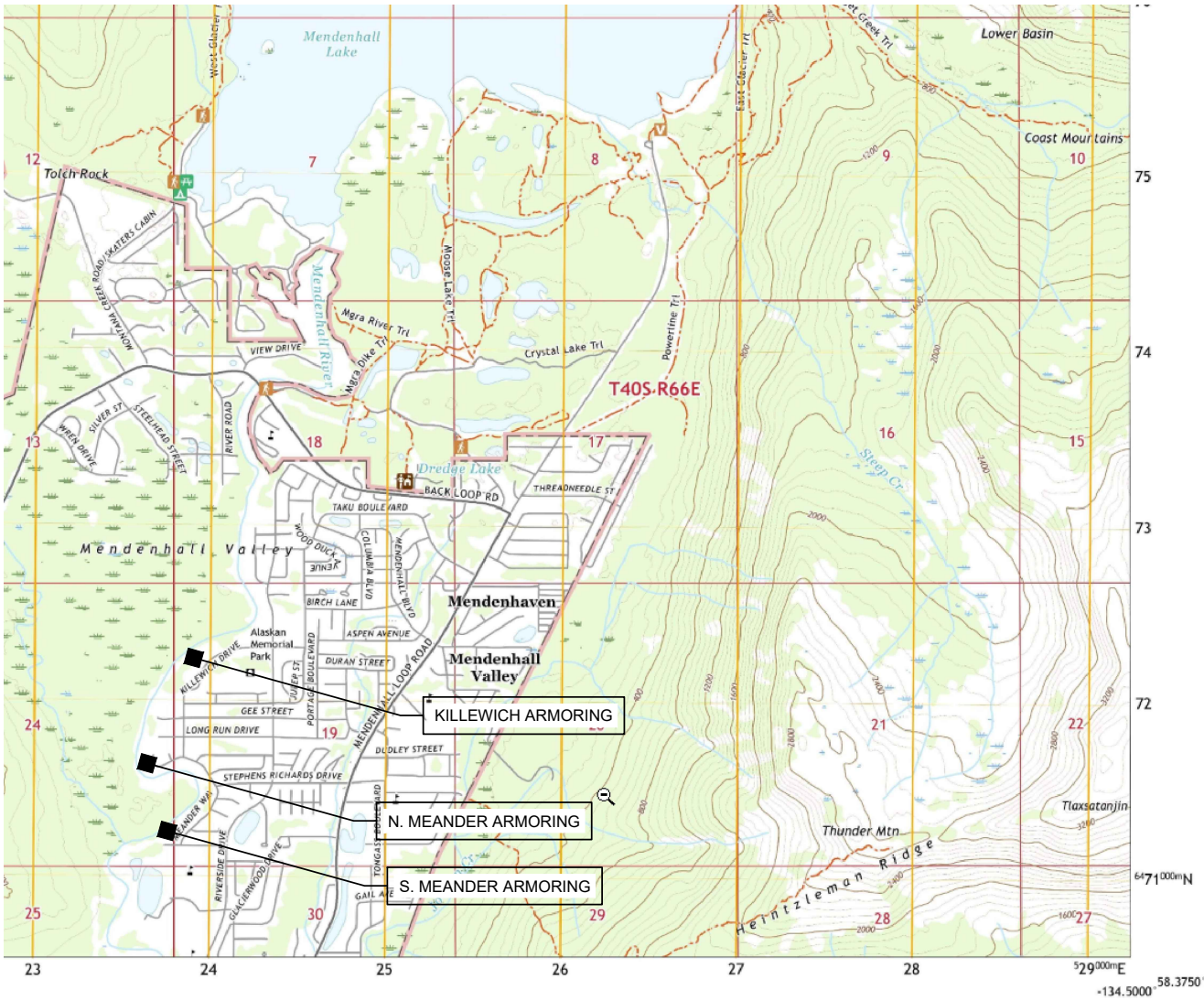
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
John Bohan, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
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Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



INDEX:

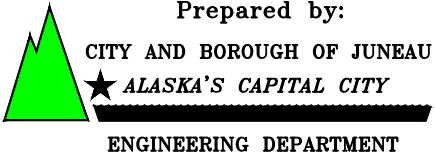
1	-	COVER AND LOCATION MAP
2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

PROJECT CONTACT:

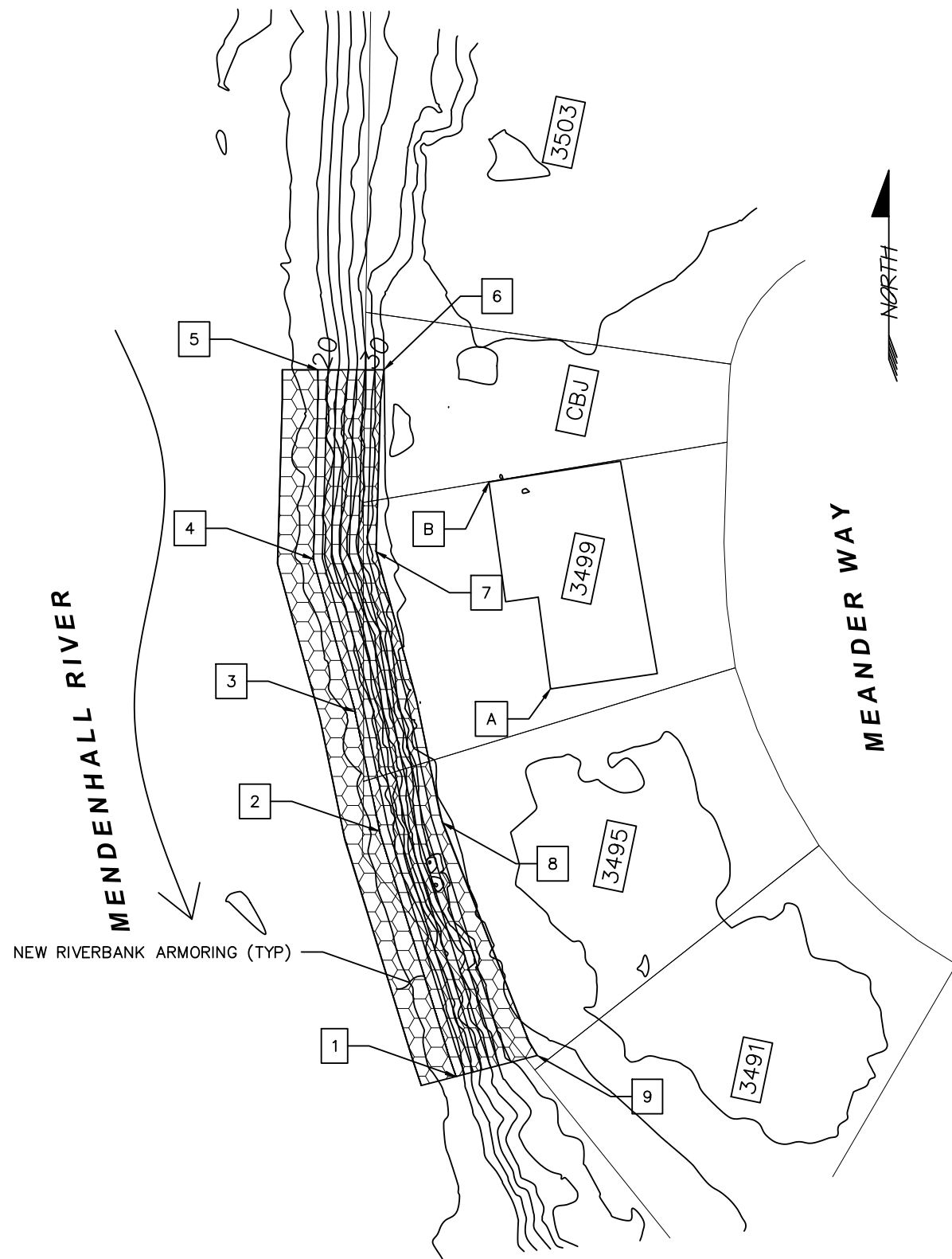
CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING		COVER AND LOCATION MAP		SHEET: 1 of 7
Date	Description	Intls.						

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown



- QUANTITIES:
- 1) TOTAL BANK ARMORING AREA: 0.19 AC
 - 2) BANK ARMORING BELOW OHW: 0.10 AC
 - 3) TOTAL RIPRAP VOLUME: 1540 CY
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A	2394026.7173	2507642.6270		CONTROL POINT - SW CNR HOUSE #3499
B	2394096.2090	2507621.9639		CONTROL POINT – NW CNR HOUSE #3499

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 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.



Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

N. MEANDER ARMORING

CONSTRUCTION PLAN

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

SHEET:

5 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

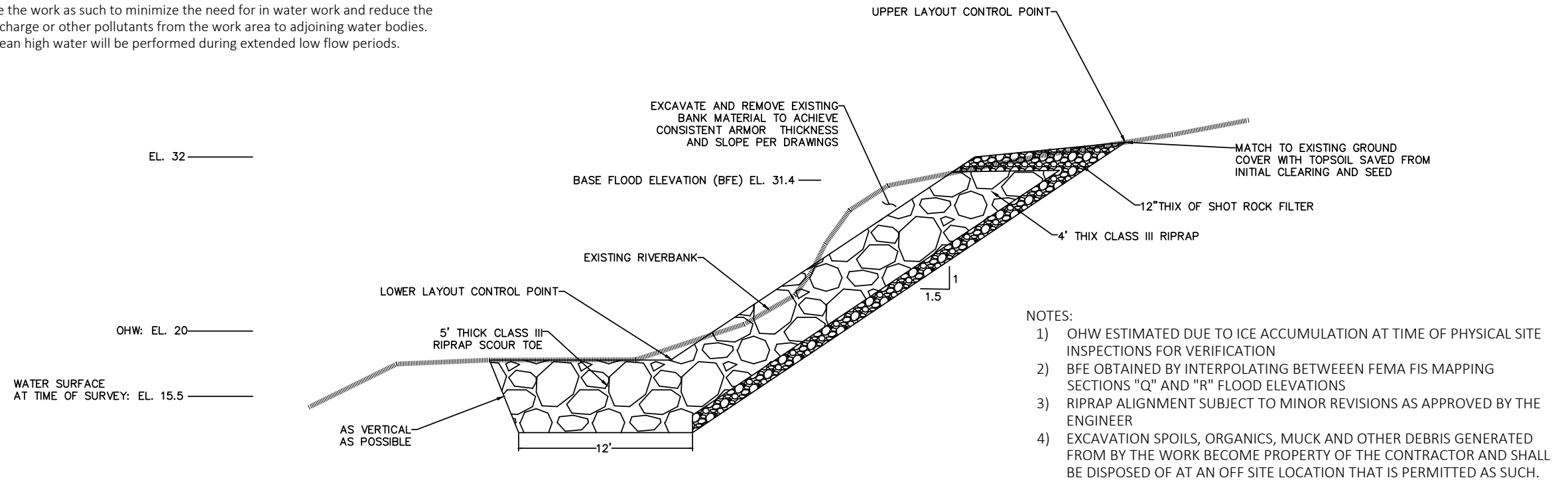
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

N. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025 DRAWN BY: STAFF SCALE: NOT TO SCALE

SHEET:
4 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0024

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Kevin and Gabriella Tillotson
3499 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 24, T 40S, R 65E, CRM (Juneau B-2)
Location: 58.38506 N, 134.59593 W

Dear Kevin and Gabriella Tillotson:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

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In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

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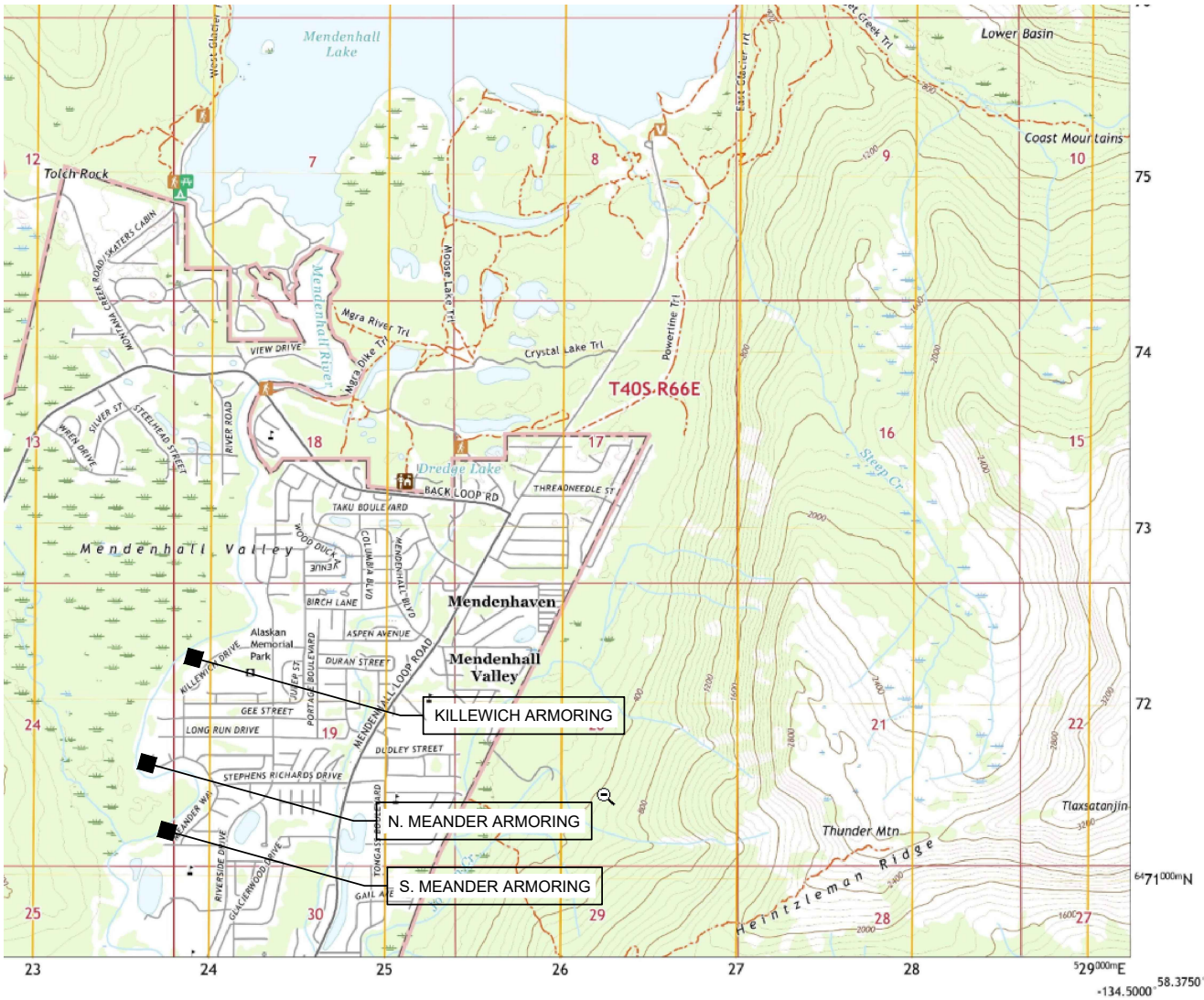
By: Kate Kanouse
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Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
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Email cc:

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Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

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Revisions		
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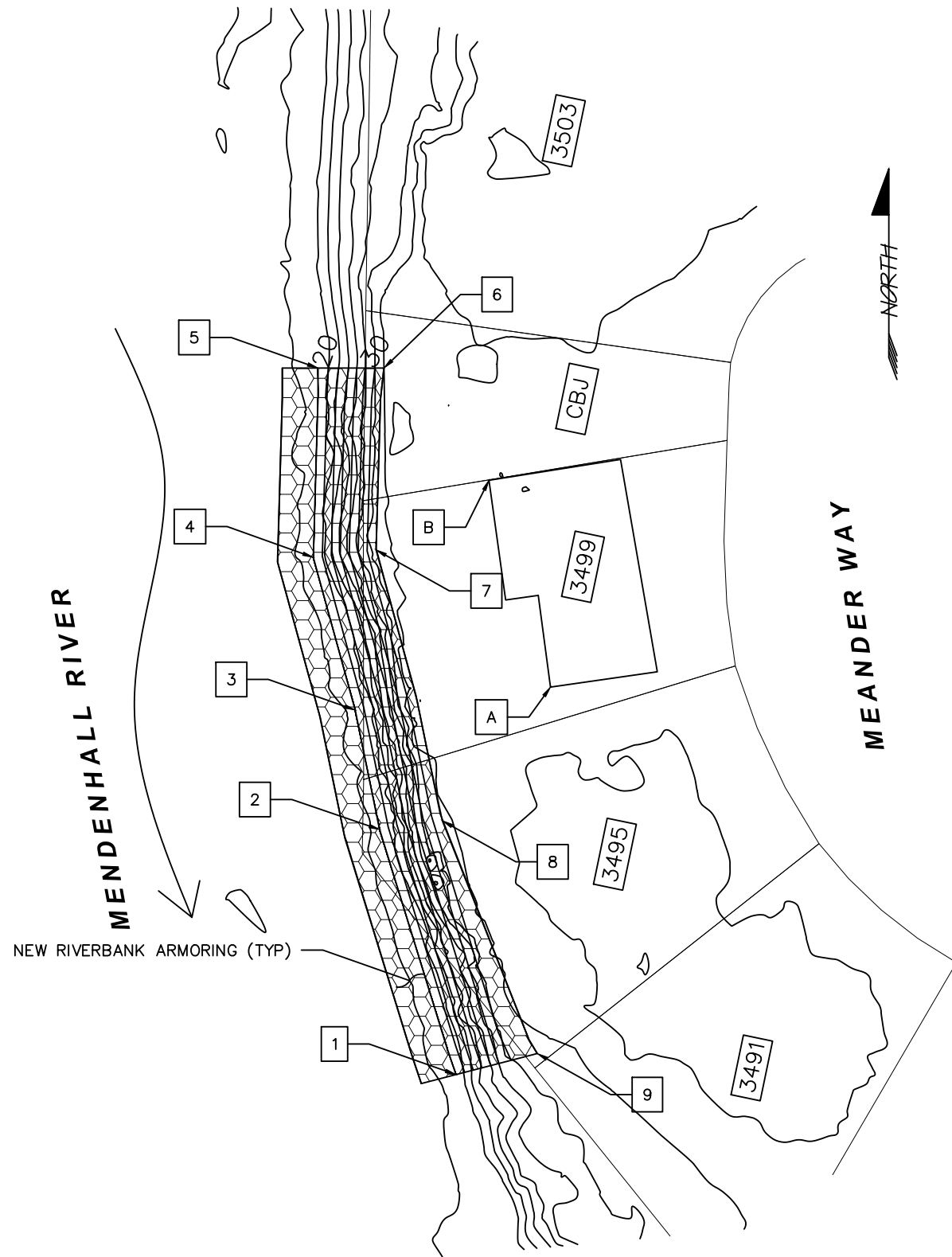


Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

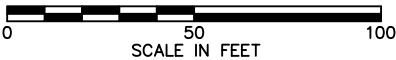
SHEET:
1 of 7



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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY

FLOOD FIGHTING

RIVERBANK ARMORING

N. MEANDER ARMORING

CONSTRUCTION PLAN

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: As Shown

DESCRIPTION

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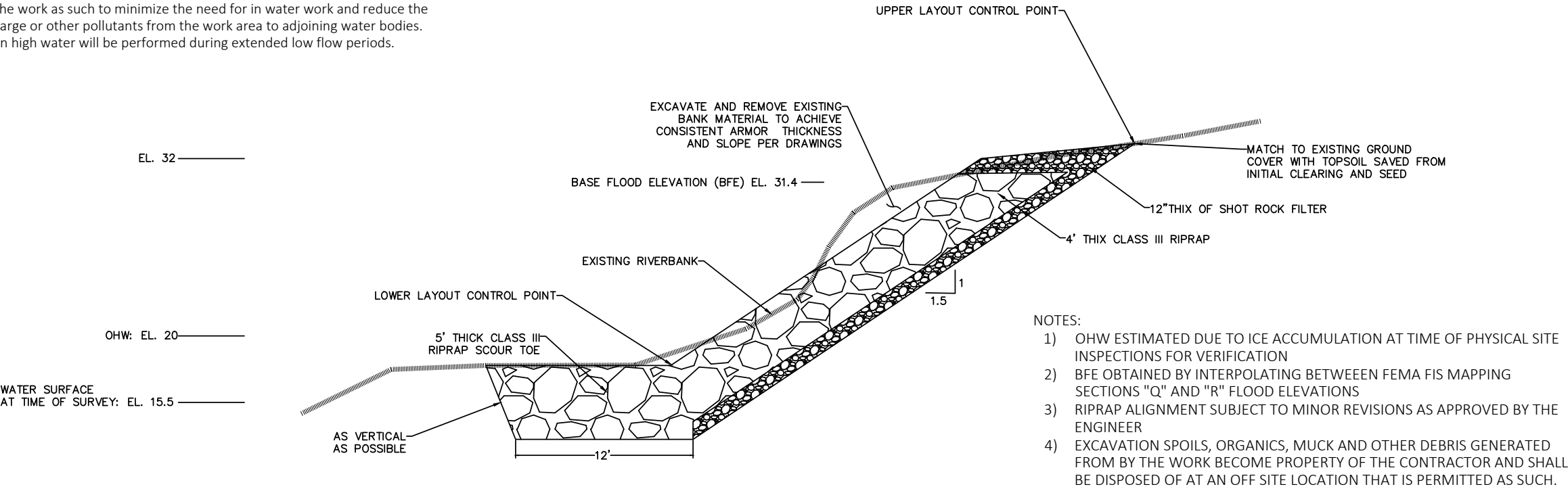
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Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING		N. MEANDER ARMORING TYPICAL SECTION		SHEET: 4 of 7
Date	Description	Intls.						
			DATE: Feb 2025		DRAWN BY: STAFF	SCALE: NOT TO SCALE		



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0027

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Harvey and Pamela Hergett
3319 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
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Location: 58.38162 N, 134.59228 W

Dear Harvey and Pamela Hergett:

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Permit Terms

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You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



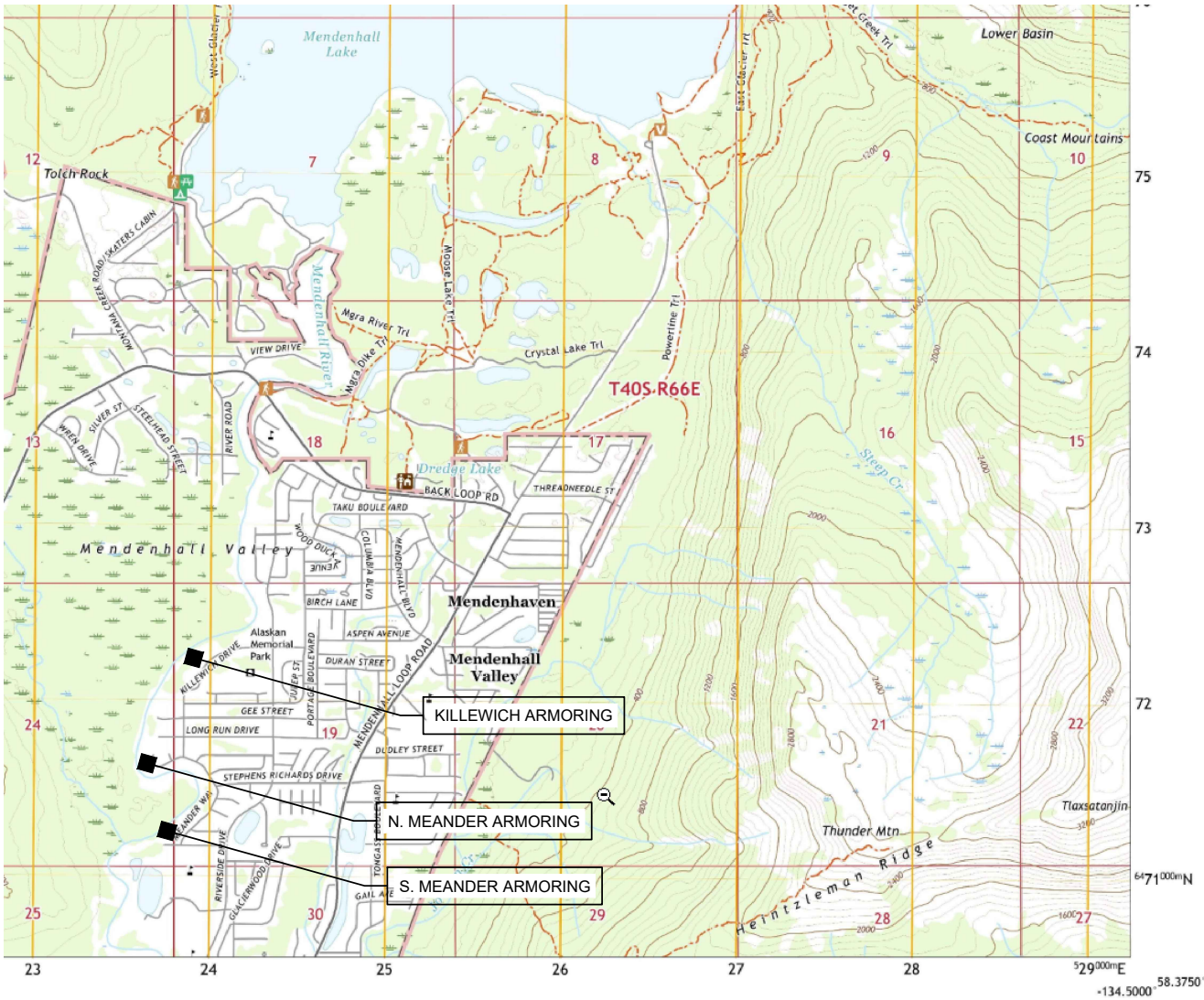
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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2	-	KILLEWICH ARMORING TYPICAL SECTION
3	-	KILLEWICH ARMORING CONSTRUCTION PLAN
4	-	N. MEANDER ARMORING TYPICAL SECTION
5	-	N. MEANDER ARMORING CONSTRUCTION PLAN
6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT LOCATION: USGS B-2 NW, AK - 2021

- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
- N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
- KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

Revisions		
Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

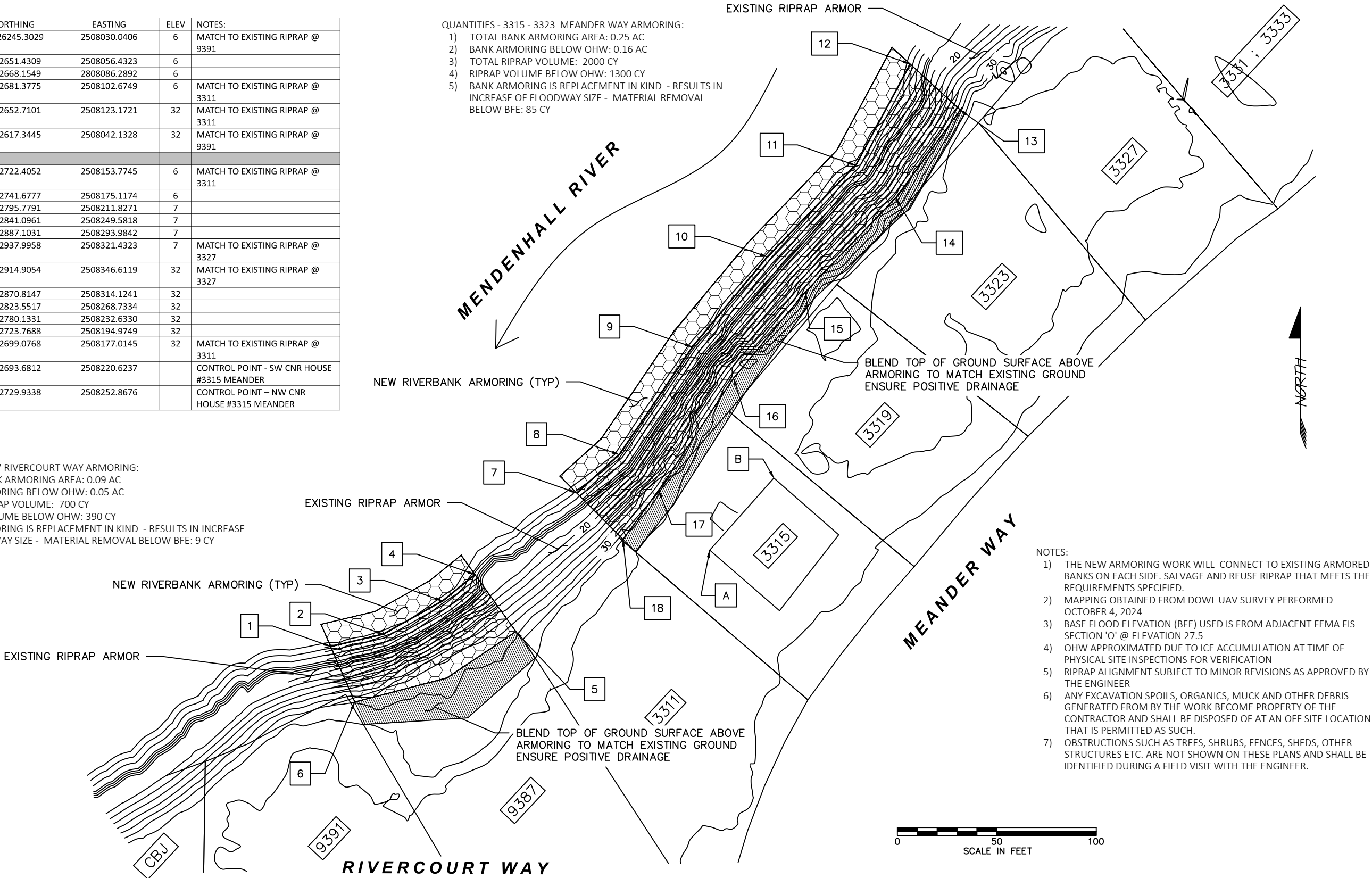
COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

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 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) TOTAL RIPRAP VOLUME: 700 CY
 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

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- 1) TOTAL BANK ARMORING AREA: 0.25 AC
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 - 3) TOTAL RIPRAP VOLUME: 2000 CY
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- NOTES:
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 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
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 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions

Date	Description	Intls.



Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
7 of 7

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

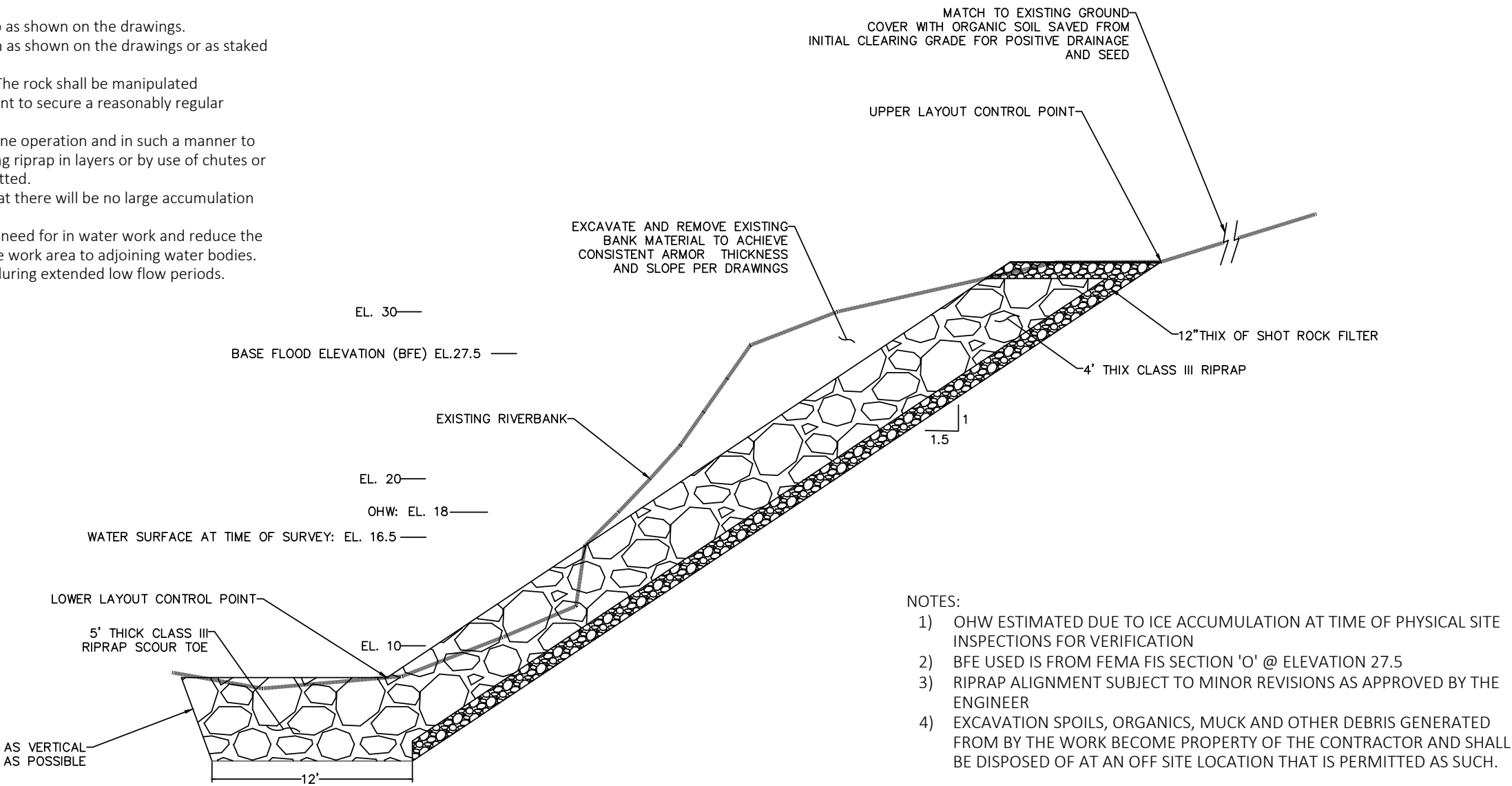
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
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Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0028

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Christine and Adam Shaw
3315 Meander Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38143 N, 134.59258 W

Dear Christine and Adam Shaw:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

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You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



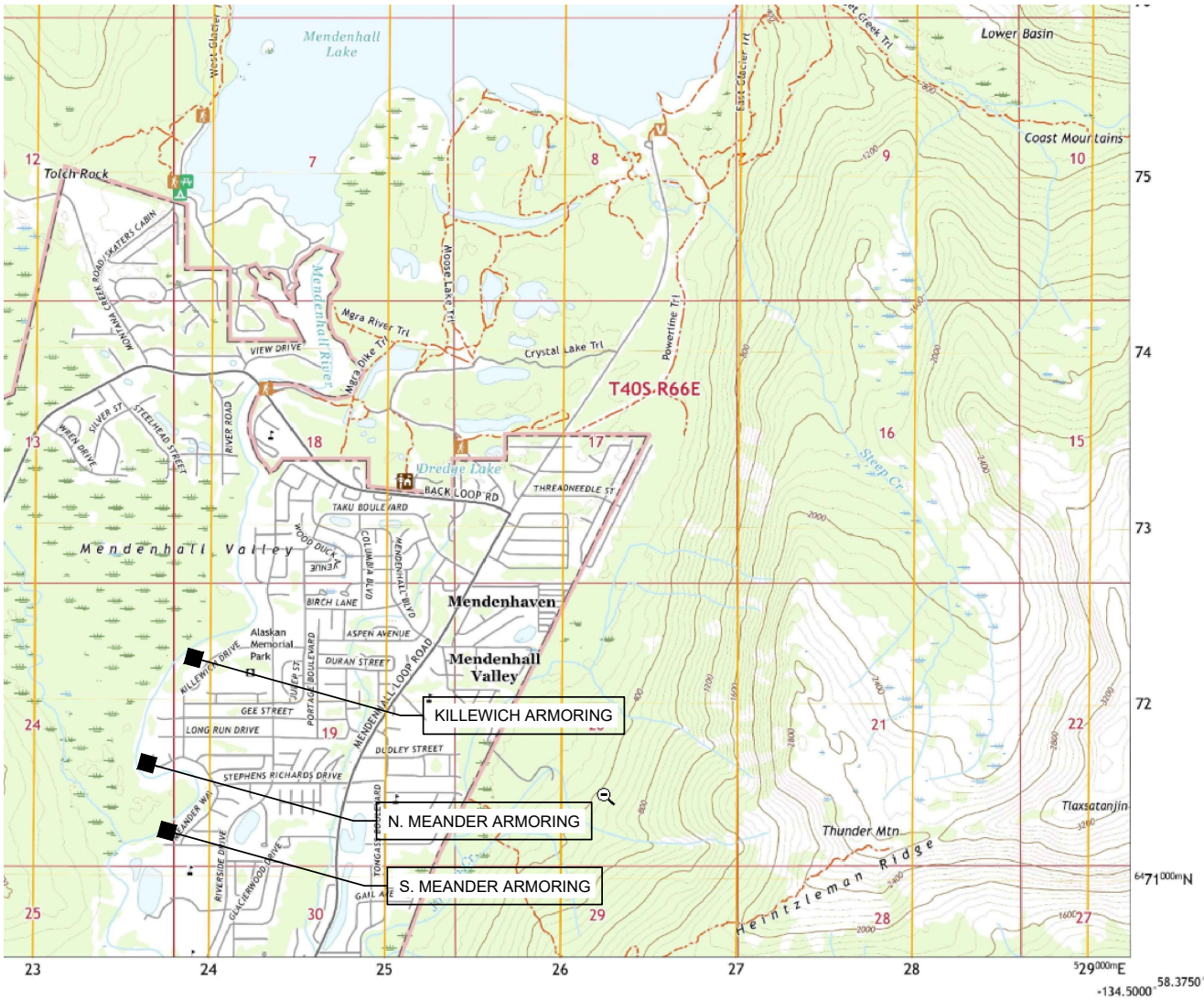
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

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ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
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Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



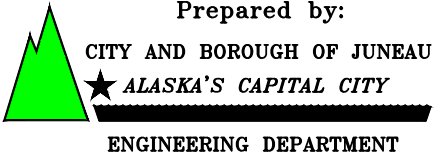
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PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

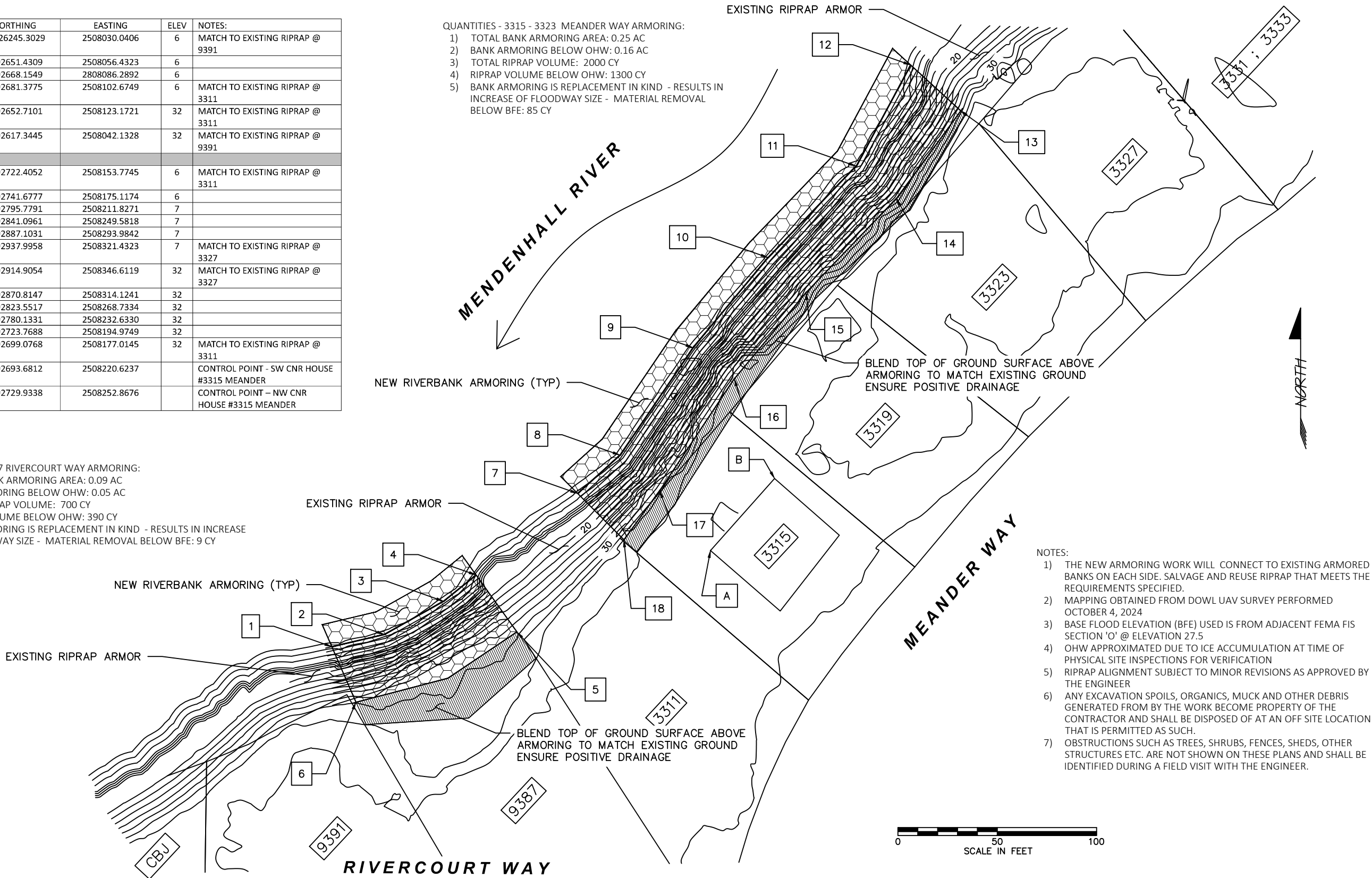
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Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	COVER AND LOCATION MAP			SHEET: 1 of 7
Date	Description	Intls.			DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown	

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Prepared by:
CITY AND BOROUGH OF JUNEAU
★ **ALASKA'S CAPITAL CITY**
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
CONSTRUCTION PLAN

DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown

SHEET:
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DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

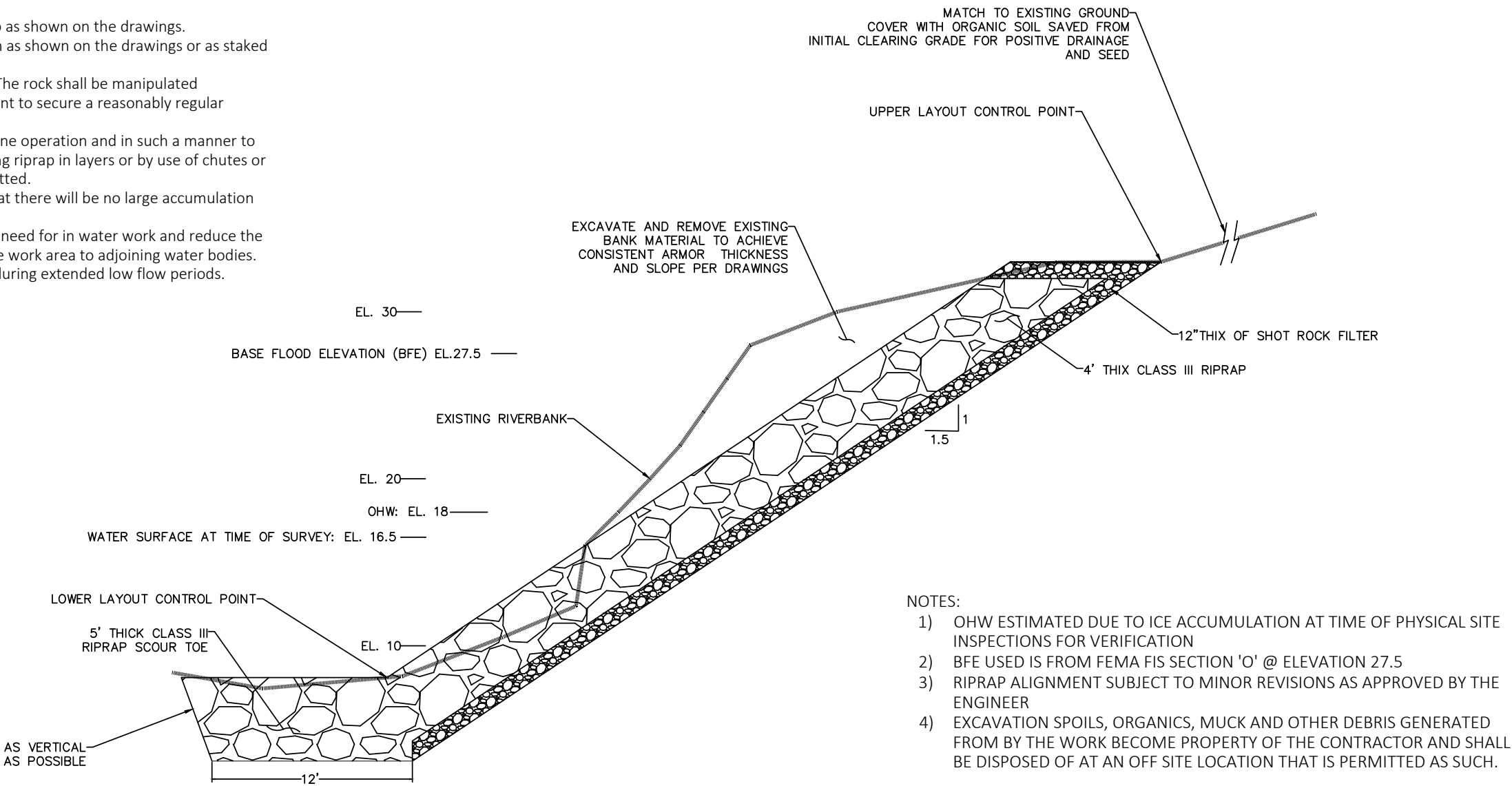
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CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

HABITAT SECTION
Southeast Region Office

802 3rd Street
Douglas, Alaska
P.O. Box 110024
Juneau, Alaska 99811-0024
Main: 907.465.4105
Email: dfg.hab.infodou@alaska.gov

FISH HABITAT PERMIT FH25-I-0029

ISSUED: March 11, 2025
EXPIRES: Life of Structure

Loretta Neal
9387 Rivercourt Way
Juneau, Alaska 99801

RE: Bank Stabilization
Mendenhall River (Stream Number 111-50-10500)
Section 19, T 40S, R 66E, CRM (Juneau B-2)
Location: 58.38107 N, 134.59315 W

Dear Loretta Neal:

Pursuant to the Anadromous Fish Act at AS 16.05.871(b), the Alaska Department of Fish and Game (ADF&G) Habitat Section reviewed your proposal to stabilize your streambank on your property along the Mendenhall River. Since 2011, the glacial-dammed lake at Suicide Basin in the Mendenhall Glacier has burst annually, causing the waters of Mendenhall Lake to rise and subsequent flooding of the Mendenhall River.^a

Project Description

You will notify Habitat Section three days prior to construction. During low water, your contractor will use heavy equipment to stabilize the riverbank with clean class III riprap and shot rock material according to specifications outlined in the project design provided by the City and Borough of Juneau Engineering and Public Works Department (enclosed). The revetment will be constructed at a 1.5:1 slope and a 5 ft riprap keyway will be constructed at the toe of the slope. End-dumping into the actively flowing river is not allowed.

Anadromous Fish Act

Stream Number 111-50-10500 has been specified as being important for the spawning, rearing, or migration of anadromous fishes pursuant to AS 16.05.871(a). The Mendenhall River provides habitat for Chinook, chum, coho, pink, and sockeye salmon, Dolly Varden, and cutthroat and steelhead trout; all species migrate through the project area.

^a National Weather Service. 2024. Juneau/Mendenhall River Flooding Suicide Basin Glacier Dammed Lake Release. National Oceanic and Atmospheric Administration, Juneau Weather Forecast Office.

In accordance with AS 16.05.871(d), your project is approved subject to the project description and permit terms.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.871 and must be retained on site during project activities. Please be advised that this determination applies only to Habitat Section regulated activities; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other state, federal, or local permits. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. Prior to engaging in any activity that significantly deviates from the approved plan, you shall notify the Habitat Section and obtain written approval in the form of a permit amendment. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is a Habitat Section responsibility. Therefore, it is recommended the Habitat Section be consulted immediately when a deviation from the approved plan is being considered.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

You may appeal this permit decision relating to AS 16.05.871 in accordance with the provisions of AS 44.62.330–630.

Please direct questions about this permit to Habitat Biologist Nicholas Jensen at (907) 465-6646 or nicholas.jensen@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner



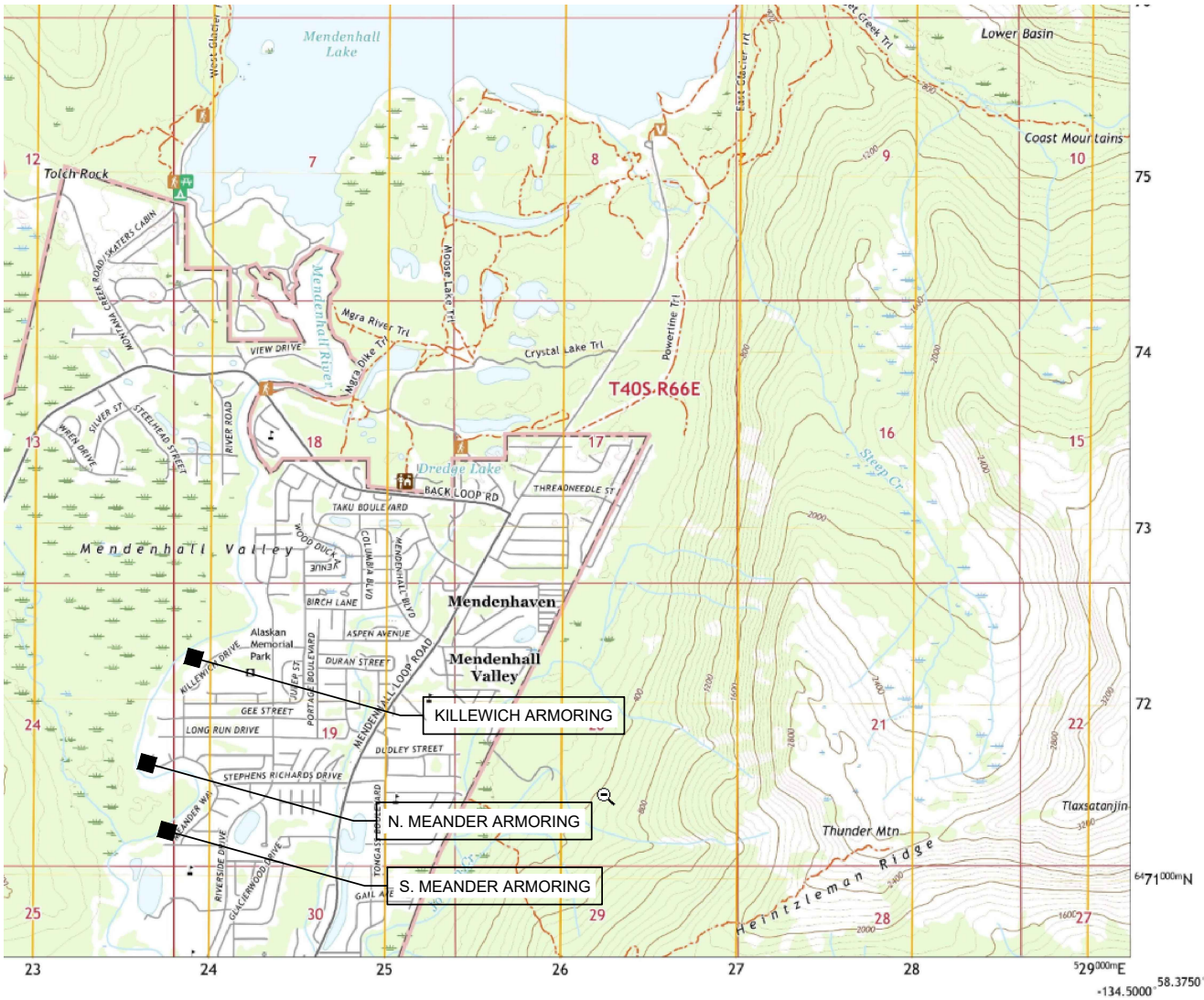
By: Kate Kanouse
Regional Supervisor

Enclosure: 2025 CBJ GLOF Emergency Flood Fighting Mendenhall Riverbank Armoring,
Juneau, AK

Email cc:

Al Ott, ADF&G Habitat, Fairbanks
ADF&G Habitat Staff, Douglas
Dan Teske, ADF&G SF, Douglas
Scott Forbes, ADF&G CF, Douglas
Carl Koch, ADF&G WC, Douglas
Forrest Courtney, CBJ, Juneau
Randy Vigil, USACE, Juneau
Andy Stevens, USFWS, Anchorage
Habitat Conservation Division, NMFS, Juneau
Laurel Smith, DNR MWL, Juneau
Sgt. Branden Forst, DPS/AWT, Juneau

2025 CBJ GLOF EMERGENCY FLOOD FIGHTING
MENDENHALL RIVERBANK ARMORING
JUNEAU, AK



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6	-	S. MEANDER ARMORING TYPICAL SECTION
7	-	S. MEANDER ARMORING CONSTRUCTION PLAN

PROJECT CONTACT:

CBJ ENGINEERING AND PUBLIC WORKS DEPT.
JOHN BOHAN
155 HERITAGE WAY
JUNEAU AK 99801
(907) 586-0800 X-4188 john.bohan@juneau.gov

- PROJECT LOCATION: USGS B-2 NW, AK - 2021
- S. MEANDER: 58.38114 LATITUDE -134.59365 LONGITUDE
9387 RIVERCOURT WAY AND 3315, 3319, 3323 MEANDER WAY, JUNEAU AK
 - N. MEANDER: 58.38544 LATITUDE -134.59597 LONGITUDE
3491,3495,3499, CBJ(NHN) MEANDER WAY, JUNEAU, AK
 - KILLEWICH: 58.39001 LATITUDE -139.59122 LONGITUDE
3835,3839,3843,3847,3849 KILLEWICH DRIVE, JUNEAU, AK

Revisions		
Date	Description	Intls.

Prepared by:
CITY AND BOROUGH OF JUNEAU
★ ALASKA'S CAPITAL CITY
ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

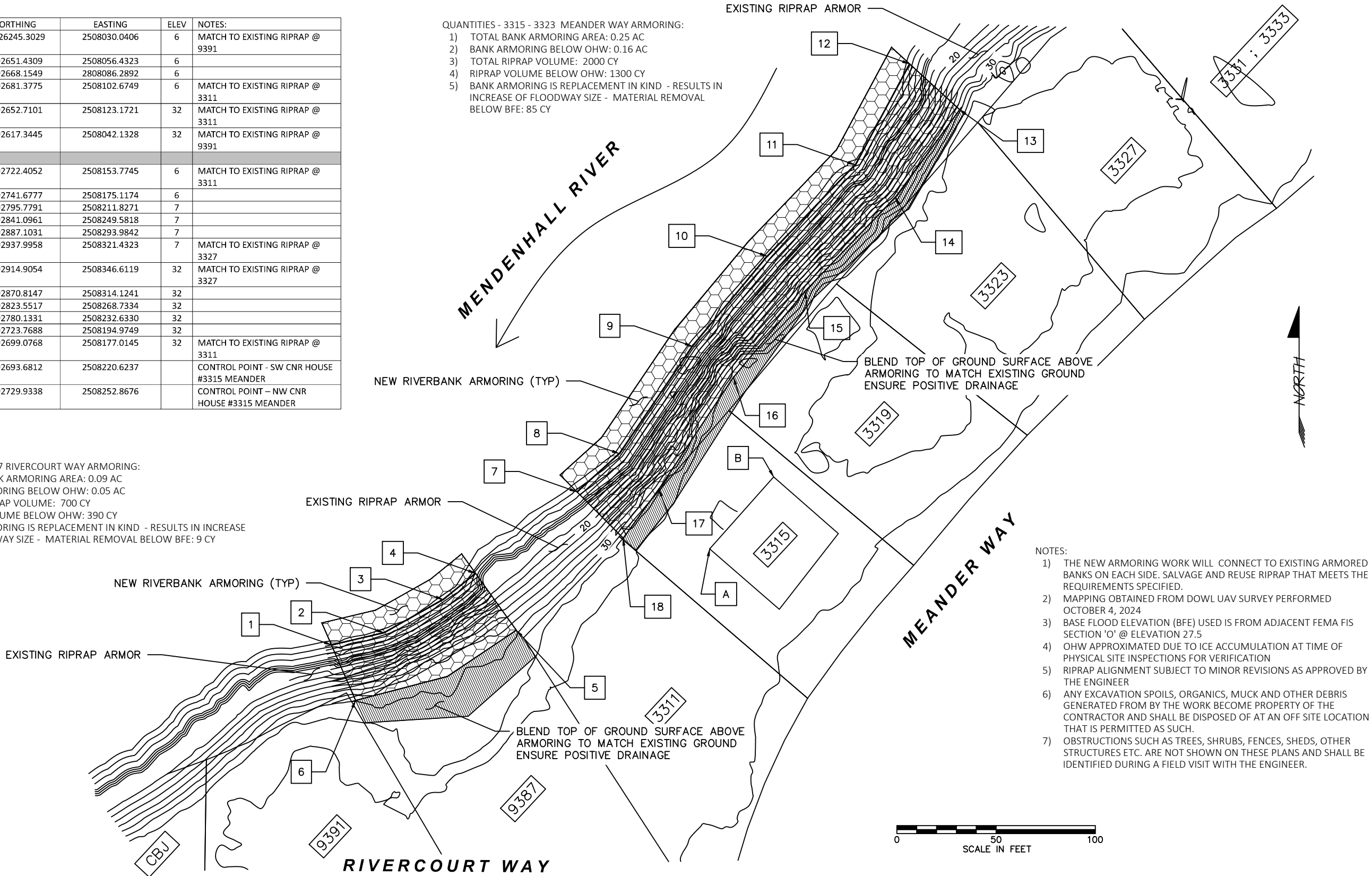
COVER AND LOCATION MAP		
DATE: Feb 2025	DRAWN BY: STAFF	SCALE: As Shown

SHEET:
1 of 7

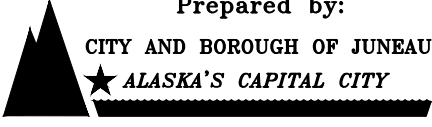
POINT #	NORTHING	EASTING	ELEV	NOTES:
1	23926245.3029	2508030.0406	6	MATCH TO EXISTING RIPRAP @ 9391
2	2392651.4309	2508056.4323	6	
3	2392668.1549	2808086.2892	6	
4	2392681.3775	2508102.6749	6	MATCH TO EXISTING RIPRAP @ 3311
5	2392652.7101	2508123.1721	32	MATCH TO EXISTING RIPRAP @ 3311
6	2392617.3445	2508042.1328	32	MATCH TO EXISTING RIPRAP @ 9391
7	2392722.4052	2508153.7745	6	MATCH TO EXISTING RIPRAP @ 3311
8	2392741.6777	2508175.1174	6	
9	2392795.7791	2508211.8271	7	
10	2392841.0961	2508249.5818	7	
11	2392887.1031	2508293.9842	7	
12	2392937.9958	2508321.4323	7	MATCH TO EXISTING RIPRAP @ 3327
13	2392914.9054	2508346.6119	32	MATCH TO EXISTING RIPRAP @ 3327
14	2392870.8147	2508314.1241	32	
15	2392823.5517	2508268.7334	32	
16	2392780.1331	2508232.6330	32	
17	2392723.7688	2508194.9749	32	
18	2392699.0768	2508177.0145	32	MATCH TO EXISTING RIPRAP @ 3311
A	2392693.6812	2508220.6237		CONTROL POINT - SW CNR HOUSE #3315 MEANDER
B	2392729.9338	2508252.8676		CONTROL POINT - NW CNR HOUSE #3315 MEANDER

- QUANTITIES - 9387 RIVERCOURT WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.09 AC
 - 2) BANK ARMORING BELOW OHW: 0.05 AC
 - 3) TOTAL RIPRAP VOLUME: 700 CY
 - 4) RIPRAP VOLUME BELOW OHW: 390 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 9 CY

- QUANTITIES - 3315 - 3323 MEANDER WAY ARMORING:
- 1) TOTAL BANK ARMORING AREA: 0.25 AC
 - 2) BANK ARMORING BELOW OHW: 0.16 AC
 - 3) TOTAL RIPRAP VOLUME: 2000 CY
 - 4) RIPRAP VOLUME BELOW OHW: 1300 CY
 - 5) BANK ARMORING IS REPLACEMENT IN KIND - RESULTS IN INCREASE OF FLOODWAY SIZE - MATERIAL REMOVAL BELOW BFE: 85 CY



- NOTES:
- 1) THE NEW ARMORING WORK WILL CONNECT TO EXISTING ARMORED BANKS ON EACH SIDE. SALVAGE AND REUSE RIPRAP THAT MEETS THE REQUIREMENTS SPECIFIED.
 - 2) MAPPING OBTAINED FROM DOWL UAV SURVEY PERFORMED OCTOBER 4, 2024
 - 3) BASE FLOOD ELEVATION (BFE) USED IS FROM ADJACENT FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 4) OHW APPROXIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 5) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 6) ANY EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.
 - 7) OBSTRUCTIONS SUCH AS TREES, SHRUBS, FENCES, SHEDS, OTHER STRUCTURES ETC. ARE NOT SHOWN ON THESE PLANS AND SHALL BE IDENTIFIED DURING A FIELD VISIT WITH THE ENGINEER.

Revisions			 Prepared by: CITY AND BOROUGH OF JUNEAU ★ ALASKA'S CAPITAL CITY ENGINEERING DEPARTMENT	2025 CBJ GLOF EMERGENCY FLOOD FIGHTING RIVERBANK ARMORING	S. MEANDER ARMORING CONSTRUCTION PLAN			SHEET: 7 of 7
Date	Description	Intls.						
					DATE: Feb 2025 DRAWN BY: STAFF SCALE: As Shown			

DESCRIPTION

The work under this section includes providing all labor, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the drawings or as directed by the engineer.

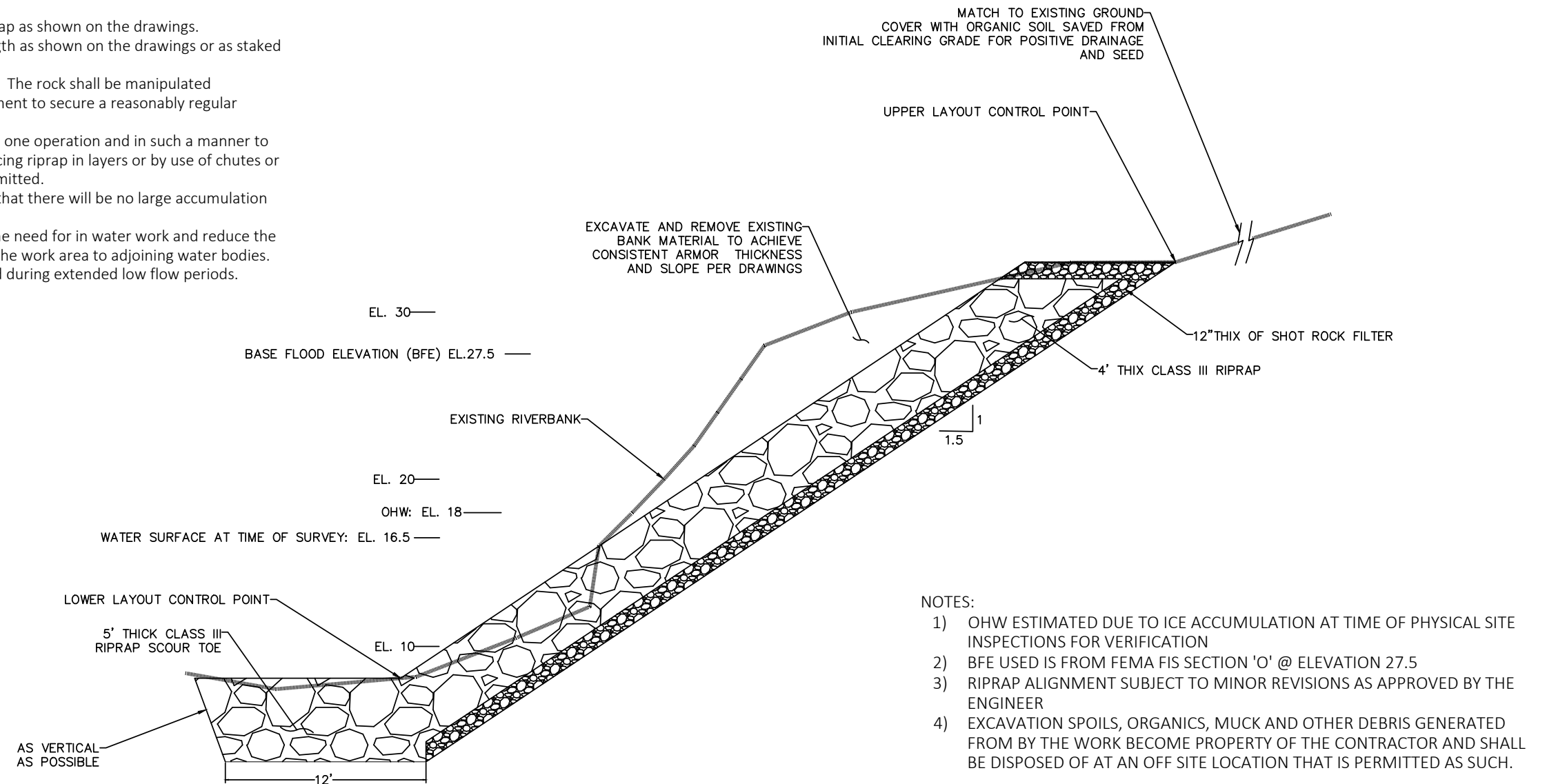
MATERIALS

SHOT ROCK BORROW: shall consist of 10" minus shot rock and shall contain no organics or other deleterious matter. The shot rock shall be evenly graded with at least 10% by weight retained on the 8" screen. Shot rock will be obtained from quarry rock unless otherwise approved by the engineer.

CLASS III RIPRAP: shall consist of no more than 10% total by weight more than 1400 pounds each, and no more than 15% of stones by weight shall weigh less than 25 pounds each. A minimum of 50% by weight shall weigh greater than 700 pounds.

CONSTRUCTION

- A. Slopes to be protected with riprap shall be free of brush, trees stumps and other objectional material and shall be graded to a relative smooth surface.
- B. The shot rock filter layer shall be place prior to placing riprap as shown on the drawings.
- C. The riprap shall be placed to the thickness, height and length as shown on the drawings or as staked with a minimum of voids.
- D. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of excavator or other suitable equipment to secure a reasonably regular surface and mass stability.
- E. Riprap protection shall be placed to full course thickness in one operation and in such a manner to avoid damaging the filter layer or underlying material. Placing riprap in layers or by use of chutes or similar activities likely to cause segregation will not be permitted.
- F. Riprap shall be placed with a fair distribution of sizes such that there will be no large accumulation or area of mainly large or small stones.
- G. The contractor shall phase the work as such to minimize the need for in water work and reduce the potential for sediment discharge or other pollutants from the work area to adjoining water bodies. Ideally, the work below mean high water will be performed during extended low flow periods.



- NOTES:
- 1) OHW ESTIMATED DUE TO ICE ACCUMULATION AT TIME OF PHYSICAL SITE INSPECTIONS FOR VERIFICATION
 - 2) BFE USED IS FROM FEMA FIS SECTION 'O' @ ELEVATION 27.5
 - 3) RIPRAP ALIGNMENT SUBJECT TO MINOR REVISIONS AS APPROVED BY THE ENGINEER
 - 4) EXCAVATION SPOILS, ORGANICS, MUCK AND OTHER DEBRIS GENERATED FROM BY THE WORK BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT AN OFF SITE LOCATION THAT IS PERMITTED AS SUCH.

Revisions		
Date	Description	Intls.



Prepared by:

CITY AND BOROUGH OF JUNEAU

★ ALASKA'S CAPITAL CITY

ENGINEERING DEPARTMENT

2025 CBJ GLOF EMERGENCY
FLOOD FIGHTING
RIVERBANK ARMORING

S. MEANDER ARMORING
TYPICAL SECTION

DATE: Feb 2025

DRAWN BY: STAFF

SCALE: NOT TO SCALE

SHEET:
6 of 7



City and Borough of Juneau
Engineering & Public Works Department
155 Heritage Way
Juneau, Alaska 99801
Telephone: 586-0800

TO: Jill Lawhorne, CBJ CDD Director
DATE: July 18, 2025
FROM: Nate Rumsey, CBJ EPW Deputy Director
RE: FZE25-001 – HESCO Barrier, Phase 1 Project - Response to July15, 2025 Planning Commission Committee of the Whole Questions

The purpose of this letter is to provide additional detail and context for selected Commissioner questions asked at the July 15, 2025 Planning Commission Committee of the Whole Meeting (PC-COW).

Question 1 (summarized): If, due to the project, water will be diverted from the developed area that flooded during the 2024 glacial lake outburst flood (GLOF), where is that water diverted and how does it not cause a rise elsewhere in the floodplain?

Response: The impacts of the project were analyzed using Michael Baker, International's (MBI) model for simulated base flood elevation, 16ft lake stage, and 18ft lake stage GLOF events, indicating that the project will be highly effective at providing protection while producing negligible impacts upstream, downstream, or within the project area.

There are multiple ways this question can be considered. First, I think it is important to view this question as it relates to CBJ Code 49.70.400 – Floodplain. The code specifically references the “base flood elevation” as the focal point for evaluating whether a project results in a rise in floodwater elevation. The base flood elevation is associated with flood elevations occurring due to a 100-year flood event. During the development of this project, CBJ Engineering and Public Works (EPW) accounted for this in two ways. First, the revetment was designed to ensure the FEMA regulatory floodway cross-sectional area was maintained or increased. Additional details about the revetment design are included in the PC-COW Agenda Packet (CIP Chief Engineer John Bohan's Riverbank Armoring No-Rise Analysis, page 25; and my Project No-Rise Analysis, page 17). Maintaining or increasing the cross-sectional area, while avoiding an increase in the frictional resistance of water flow within the floodway at revetment locations precludes an increase in the base flood elevation. Additionally, CBJ worked with Michael Baker, International (MBI) to analyze the base flood elevation scenarios both with, and without HESCO barriers. CBJ EPW used the results of the MBI model to inform decisions regarding the placement, height, and depth of

HESCO barriers during installation. Each component of this project was evaluated by licensed engineers and determined not to cause a rise in the base flood elevation.

Secondly, more broadly, CBJ EPW considered the impacts of the project at various major flood levels to understand the project's effects during potential future GLOF events. Simulating a 16ft lake stage GLOF (similar to 2024 GLOF), the HESCO barriers will divert water from inundating the eastern floodplain (and providing protection to nearly 500 properties that were impacted by the 2024 GLOF) to the low lying, undeveloped areas in the western floodplain. Although there are minor increases in floodwater elevations due to the HESCO barriers, these impacts are largely contained within the project area, and no additional structures or developed properties will be impacted. An analysis of the effects of the HESCO barriers during a simulated 18ft lake stage event was also performed, concluding that over 800 properties would be protected, with negligible impacts upstream, downstream, or within the project area. Hydrologic and hydraulic analyses of the base flood elevation and at 16ft and 18ft flood levels are discussed in MBI's "Mendenhall River Preliminary 2D Surface Water Model Report" and can be found in Section 4.2 of their report (page 84 of the PC-COW Agenda packet).

Question 2 (summarized): How can CBJ demonstrate that the project conforms to CBJ Code 49.70.410(g), *Exceptions shall only be issued upon a determination that the exception is the minimum necessary, considering the flood hazard, to afford relief.*

Response: The concept of establishing a near-term, non-permanent flood barrier, using a combination of targeted riverbank revetment and the installation of HESCO barriers was identified based on the consultation, technical guidance, and direct support provided by the Army Corps of Engineers (USACE). The Federal Emergency Declaration established the necessary authority for USACE to assist CBJ in our floodfighting efforts in response to GLOF flood risk. Per the Cooperative Agreement between USACE and CBJ, USACE's assistance is "limited to those [measures] necessary to prevent or reduce impacts of floods that (1) pose a significant threat to life and/or improved property, and, (2) the proposed assistance is beyond the capability of local interests and the State to perform in a timely manner." CBJ EPW worked hand-in-hand with USACE throughout the development and construction of the HESCO Barrier, Phase 1 project to ensure that the project provided the necessary protection to prevent or reduce the impact of potential future GLOF events similar in magnitude to the 2024 GLOF.



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: CBJ Division of Lands & Resources
STAFF PERSON/TITLE: Dan Bleidorn, Lands and Resources Manager
DATE: June 9, 2025
APPLICANT:
TYPE OF APPLICATION: AME 19-15 Downtown Douglas / West Juneau Area Plan

PROJECT DESCRIPTION:

The draft Downtown Douglas / West Juneau Area Plan (DD/WJ), as submitted by the Steering Committee, is scheduled for a public hearing by the Planning Commission on Tuesday, July 22, 2025. If adopted, this area plan will be used by decision-making bodies to make informed decisions about development projects and priorities, directly impacting your department/division.

LEGAL DESCRIPTION:

PARCEL NUMBER(S):

PHYSICAL ADDRESS:

SPECIFIC QUESTIONS FROM PLANNER:

The Planning Commission (PC) will provide a recommendation to the Assembly on the adoption/amendment of the DD/ WJ Area Plan. This plan touches many CBJ departments and does not belong to any one agency. Your input on priorities, corrections, and other feedback will aide the PC in making an informed recommendation, and increase your agency's understanding of your role in implementing various action items outlined in the plan.

The Lands Manager has previously provided comments to the Steering Committee regarding the now-adopted Goal 5.3: Preserve the natural, undeveloped area above 5th Street, and Action A: Re-designate the Land Use category of approximately 17 acres of CBJ-owned parcels abutting the 6th Street right of way from Urban Low Density Residential to Conservation Area or Natural Area Park.

AGENCY COMMENTS:

Goal 5.3: This goal is contradictory to Assembly direction to utilize CBJ property for housing. This property is included in the Land Plan for housing development, not park land. The street is already platted, has utilities installed, and road frontage, and is centrally located within a populated area that is close to a school, library, post office, fire department, and recreational services.

Regarding Committee Rationale "A substantial portion of Douglas' population does not support development above 5th street. Reasons center on (a) untoward irrevocable disruption of Douglas community life, wildlife, and valued natural beauty; (b) anticipated resulting large increase in traffic; (c) at least 10,000 truck loads of material (fill-dirt, construction equipment, various supply); (d) extreme land-grade (slope), and loose ground (e.g. blue clay) with much-increased risk of slide zones (damage from which is not covered by residential insurance)." -- Who determined that this would need 10,000 truckloads of material? Who determined this was in a slide hazard zone? Is there some report that shows the details of these analyses? What park value does this land have that makes it more important to save as a park than any other property around it? Keep in mind that there is 150+ acres of high-value parks in this same area.



(907) 586-0715
CDD_Admin@juneau.org
www.juneau.org/community-development
155 S. Seward Street • Juneau, AK 99801

COMMUNITY DEVELOPMENT DEPARTMENT - REQUEST FOR AGENCY COMMENT

DEPARTMENT: CBJ Parks & Recreation Department
STAFF PERSON/TITLE: Lauren Verrelli, Deputy Director
DATE: July 3, 2025
APPLICANT:
TYPE OF APPLICATION: AME 19-15 Downtown Douglas / West Juneau Area Plan

PROJECT DESCRIPTION:

The draft Downtown Douglas / West Juneau Area Plan (DD/WJ), as submitted by the Steering Committee, is scheduled for a public hearing by the Planning Commission on Tuesday, July 22, 2025. If adopted, this area plan will be used by decision-making bodies to make informed decisions about development projects and priorities, directly impacting your department.

LEGAL DESCRIPTION:

PARCEL NUMBER(S):

PHYSICAL ADDRESS:

SPECIFIC QUESTIONS FROM PLANNER:

The Planning Commission (PC) will provide a recommendation to the Assembly on the adoption/amendment of the DD/ WJ Area Plan. This plan touches many CBJ departments and does not belong to any one agency. Your input on priorities, corrections, and other feedback will aide the PC in making an informed recommendation, and increase your agency's understanding of your role in implementing various action items outlined in the plan.

P&R is integral to the plan's Vision for a vibrant, connected community, with fully developed amenities for both residents and visitor. The Plan envisions coordination between P&R and Docks & Harbors on a shared vision and master plan for the Harbor and surrounding park and recreational facilities. Note the Action Chart starting on p. 38 outlines anticipated implementing partners for the plan Goals and Actions, including P&R Please provide updates on your current policies and projects that are relevant to action items in the DD/WJ area plan.

AGENCY COMMENTS:

Goal 1.6: We have proposed relocating Facilities Maintenance from the former Douglas School building to Marie Drake, and eventually demolishing the failing Mt. Jumbo Gym, which has exceeded its useful life. Major building components are failing, including the roof and walls, and due to the building's age and condition, repairs are cost-prohibitive. One of the main benefits of doing this is that it would open up an entire city block in downtown Douglas for housing.

Goal 2.2: We currently permit tourism operators at both Treadwell Mine Historic Trail and Homestead Park. Commercial Use guidelines for these two locations are outlined in our 2024 Commercial Recreation Use. Homestead Park allows for "high commercial use," while Treadwell Mine Historic Trail allows for "medium-low commercial use." We have one operator that has been operating at Treadwell since 2023, Homestead on the otherhand sees frequent tours dropping off guests on a daily basis.

Goal 3.2: Homestead Park is currently undergoing a number of improvements including replacements to the elevated wooden platforms, walkways, and stairs. This project is funded by Marine Passenger Fees. The parking design is not being changed due to the use of this park is frequestnly used by large buses to drop off guests. Limited public parking is also available. Parks & Rec does not have plans to include access to the waterfront in

AGENCY COMMENTS (CONTINUED):

in respect to the neighbors nearby.

Goal 5.3: We do not recommend changing this land to park land. We already have so much park land to manage that it would need to be property that is something unique for us to want to consider. This parcel is just not that.