AGENDA

BURNS PLANNING COMMISSION MEETING

Wednesday, January 3, 2024, at 6:00 p.m.

Burns City Hall
242 S. Broadway
Burns, Oregon 97720

Chairperson Forrest Keady
Commissioner Jamie Attleberger
Commissioner Bryan Garo

COMMISSIONERS AND CITIZENS ARE WELCOME TO JOIN THE MEETING VIA ZOOM AS WELL AS IN PERSON.

Members of the public and media wishing to address the commission during any public comment period will be able to join the webinar as an "attendee." Attendees will be able to view the Webinar on a desktop, laptop or mobile device such as a smartphone or iPad by using the following link: https://us05web.zoom.us/j/6523923048 Meeting ID: 652 392 3048

1. Call Meeting to Order
2. Pledge of Allegiance
3. Roll Call
4. Approve Agenda
5. Approve Minutes – August 7, 2023

6. Public Comment

7. Public Hearing –

   7.1 Consideration of the adoption of new FEMA Flood Insurance Rate Maps and an associated development code amendment

   Exhibit A: FEMA Flood Insurance Study.
   Exhibit B: Draft for the Flood Hazard Area in Section 18.30.325 of the City of Burns Zoning Ordinance.
   Exhibit C: Draft Resolution to Adopt Duties and Responsibilities of the Floodplain Administrator for the city of Burns.
   Exhibit D: DLCD Notice.

8. New Business

   8.1. Professional Office Uses in Residential Zones (Discussion/Action)
   8.2. New Planning Application Forms (Discussion)

9. Old Business

10. Adjourn

The Burns Planning Commission meetings are available via Zoom and in accordance with ORS 192.610 to 192.690, these meetings conform to guidelines set forth on public meeting law. In accordance with the Americans with Disabilities Act, this meeting location is accessible to person with disabilities. A request for an interpreter for the hearing impaired or for other accommodations for person with disabilities should be made at least 48 hours before the meeting to City Recorder Tiffany Leffler (541) 573-5255.

BURNS PLANNING COMMISSION

August 7, 2023

The Burns Planning Commission held a meeting on August 7, 2023, at 6:00 p.m. Members present were as follows:

Acting Chairperson – Bryan Garo
Commissioner – Forrest Keady – Via Zoom
Commissioner – Jamie Attleberger

Also present were Interim City Manager Judy Erwin, City Land Use Planner Jay Harland via Zoom, Planning Associate Seth Adams, and City Clerk Tiffany Leffler.

Acting Chairperson Garo called meeting to order at 6:00 p.m.

AGENDA

Commissioner Keady moved to approve the agenda as presented. Commissioner Attleberger seconded the motion. All ayes.

MINUTES

July 11, 2023 -

Commissioner Keady moved to approve the minutes as presented. Commissioner Attleberger seconded the motion. All ayes.

PUBLIC COMMENTS

There was no public comment.

PUBLIC HEARING

Acting Chairperson Garo opened the public hearing at 6:15 p.m.

City of Burns –A proposed legislative amendment to adopt a new Zoning Ordinance for the City of Burns.

Acting Chairperson Garo asked for Admonishment.

LUP Jay Harland provided the Admonishment.

LUP Jay Harland asked if the commissioners had any ex parte to disclose.

The commissioners nothing to disclose.

LUP Harland reviewed the following staff report:

APPLICANT: City of Burns

PLANNING FILE: LAPF-001-2022

NATURE OF APPLICATION: A proposed legislative amendment to adopt a new Zoning Ordinance for the City of Burns.

STAFF ANALYSIS: The proposed Zoning Ordinance would replace the existing Ordinance in its entirety. The proposed Ordinance is based upon the State of Oregon's *Model Development Code and User's Guide for Small Cities*, with numerous modifications and organizational changes made to better reflect the needs of the City of Burns and to meet legal requirements under State law, Oregon Administrative Rules, and applicable caselaw. The proposed Zoning Ordinance was also structured and written in a way that should improve the usability of the Ordinance for the general public.

I. BACKGROUND INFORMATION

A. **Project Initiation:** The proposed Zoning Ordinance amendment was initiated by the City Council on July 13, 2022, through Resolution No. 22-737. *See,* Exhibit A.

B. **Advisory Committee:** Pursuant to the City Council's Resolution initiating the amendment, a Citizens Advisory Committee was established for the purpose of obtaining community involvement and input for the new Ordinance. The Advisory Committee met on three occasions between November 2022 and April 2023. During these meetings the Committee reviewed and discussed the proposed draft Ordinance text and provided comments and recommendations to staff. The resulting draft Ordinance now before the Planning Commission is the product of that collaboration.

C. **Agency Coordination and Public Notice:** Pursuant to State legal requirements and the City of Burns Comprehensive Plan, the proposed Zoning Ordinance was provided to the Department of Land Conservation and Development, all potentially affected agencies listed in Table 1.1 of Section 1 of the Comprehensive Plan, the Oregon Department of Transportation (ODOT), and the Federal Emergency Management Agency (FEMA) for review and comment. The draft Ordinance was also posted to the City's website for public review. At the time this report was prepared, staff had not received any comments from notified agencies or members of the public.

II. APPLICABLE CRITERIA

As a legislative amendment proposal, the Planning Commission is authorized to provide a written recommendation to the City Council which will decide whether to adopt the proposed Zoning Ordinance.

III. KEY ISSUES & TOPICS FOR CONSIDERATION

The proposed Zoning Ordinance text provided as Exhibit B to this report contains numerous highlights that call out topics which staff would like to draw the Planning Commission's attention to. These highlighted sections of text pertain to code provisions that would be completely new to Burns and/or they are topics that staff believes warrant discussion amongst the Planning Commission and City Council. Additionally, there are other topics within the proposed Ordinance that staff would also like to make note of as part of the Planning Commission hearing. Combined, these topics include, but are not necessarily limited to the following:

- **New Zoning District Classifications** – The proposed Ordinance would result in three residential zoning districts, two of which are for single-family residential development at densities of between 2 and 4 units per gross acre (SFR-4 zone) and between 3 and 7 units per gross acre (SFR-7 zone). The third residential zone is proposed to be for attached multiple-family residential development (MFR zone). The current Zoning Ordinance essentially only has two residential zoning districts, one for lower density single-family dwellings (RS zone), and one for multi-family. While there is also a separate single-family zone that permits single mobile homes on individual lots (the RS/MH zone), this is effectively just an overlay zone in which all other standards of the RS zone are applicable. The primary purpose of reorganizing the residential districts is to provide opportunities for the creation of smaller lots that will result in higher-density, single-family detached development. At present, all new single-family residential lots are required to be a minimum of 7,500 square feet. The SFR-4 zoning district is a relabeling of the current RS zone from a permissible use and density standpoint. The new proposed SFR-7 zone would allow for lots to be as small as 4,800 square feet. While the smaller minimum lot size is allowed, there is no maximum size proposed, so the new Ordinance would not have the effect of forcing developers into building smaller and denser single-family housing, it simply provides an option to do so that does not currently exist. No zone changes are proposed as part of the project, and the new SFR-7 zoning district is not being applied to any properties at this time. After the new ordinance is adopted then it would be available as an option for future zone changes within the single-family residential comprehensive plan map designated areas.

For non-residential uses, the proposed Ordinance retains a single commercial zoning district (GC zone). The zoning ordinance retains the "Business Park" designation which exists in the current code but is not actually designated for any properties. The new code consolidates the Light Industrial and Heavy Industrial zoning districts into a single Industrial (I) district. The reason for the consolidation is that the uses and standards in these two zones are almost exactly the same and our reading of the comprehensive plan is that it would be straightforward to

change from one industrial designation to the other. As such, there is minimal practical regulatory benefit to retaining two separate industrial designations.

Finally, the proposed Zoning Ordinance will retain the City's Open Space (OS) zoning district which, as the name implies, allows for the creation of open space areas, livestock activities, wildlife resources, etc. There are no meaningful changes proposed to the Open Space zone, although staff is recommending that the minimum lot area be reduced from the 40 acres down to 20 acres, as a 40-acre minimum is quite large for minimum lot size within a UGB and may prevent creation of reasonable sized lots for open space purposes.

- **Permitted Uses and Development Standards Tables** – The proposed Zoning Ordinance consolidates all permitted use types into a single table as opposed to having uses listed under each separate zoning district. The proposed table will make it easier to see all uses in one section while also allowing users to see every zoning district in which a use is allowed. Similarly, the proposed Ordinance contains two tables of development standards (e.g., lot zines, setbacks, etc.) for the Residential and Non-Residential zones as opposed to listing them under each respective zoning district. This formatting change is also for improved usability of the Ordinance.

- **Allowances for Two or More Primary Dwellings on One Parcel** – With the objective of providing for additional development options, the proposed Ordinance would allow for two or more detached dwellings on a single parcel within the MFR zoning district, and conditionally allow them in the SFR-4 and SFR-7 zones. Staff sees no reason to prevent someone from building two or more detached dwellings on a parcel zoned for multi-family residential use, and if two or more detached dwellings can be built on a single parcel in the SFR-4 and SFR-7 zones while meeting all setback requirements, staff sees no meaningful difference from duplex units which are a conditionally permitted use under the current Zoning Ordinance.

- **Professional Office and Medical Service Uses in Residential Zones** – At present the Burns Zoning Ordinance permits medical and professional offices uses within the Single-Family Residential (RS) zone. This is an unusual allowance for such zones as these uses not only occupy single-family lots in what has become a housing constrained market, but they also create conditions that are not conducive to a single-family residential neighborhood. For example, and as noted by some members of the Citizens Advisory Committee, these businesses can and often do create significant parking and traffic problems for the surrounding residences. As such, the city may want to consider removing professional office and medical services (excluding Hospitals) from the list of permitted uses within residential zones in a future stand-alone code amendment project. Staff is not recommending that this change be made as part of this code rewrite because the code rewrite is not intended to make major policy changes to uses allowed within the respective zoning changes, but rather to have a code that is structured in a modern and easy-to-use

fashion. The Planning Commission could recommend the Council initiate such a standalone project following adoption of the new code.

- **Short-Term Dwelling Rentals in Residential Zones** – Given the rise in popularity for short-term dwelling rentals (e.g., Airbnb, VRBO, etc.) over the past several years, the proposed Zoning Ordinance contains provisions for their regulation where none currently exist. While these uses exist in the city in residential areas now, they are arguably a zoning violation under the current ordinance. Based upon feedback from members of the Citizens Advisory Committee, the proposed Ordinance would require a City of Burns business license for the operation of a short-term dwelling rental and limit their concentration by allowing no more than one per city block within residential zones. Additionally, the proposed text will ensure zoning compliance is coordinated with other regulations, fees and taxes related to this use that might be adopted by the City to regulate overnight accommodation rentals in residential zones.

- **RV Parks** – The proposed Zoning Ordinance also includes regulations for the development of Recreational Vehicle (RV) parks within the City of Burns. There are no allowances for this use under the current Zoning Ordinance and it is one that staff, and the Citizens Advisory Committee thought should be included in the new code. The proposed regulations would allow RV parks within the GC and BP zones and require them to be built to State standards. In addition, special development standards were included to ensure that RV parks are compatible with surrounding uses.

- **Entertainment Establishments with Outdoor Uses** – The table of permitted uses in the proposed Zoning Ordinance allows for the operation of Entertainment Establishments that also include outdoor uses such as amplified music. The proposed special standards would limit the noise levels and the hours of operation for the outdoor use.

- **Historic Landmarks** – Section 18.30.150 of the current Zoning Ordinance contains historic landmark regulations, the purpose of which is defined in part as being "...to provide interim guidelines for historic resource protection during completion of the final historic inventory..." and "...to safeguard the heritage of the City by providing for the protection of landmarks which represent significant elements of its history." This code section appears to have been adopted in 2018, but to the best of staff's knowledge, a historic inventory of the city has not been completed and there are no City-designated historic landmarks in Burns. As such, staff is seeking the Planning Commission's input in its recommendation to the City Council as to whether or not the historic landmark regulations should be retained in the new Zoning Ordinance.

- **Parking Area Paving** – Section 18.040(13)(a) of the current zoning ordinance requires paving of all new parking spaces. During several site plan reviews, however, it

has come up that paving all the spaces in certain locations where drainage facilities are limited is problematic. The Planning Commission has approved the site plans requiring less than 100% paving of the new parking spaces. The PC draft of the ordinance retains the current ordinance language requiring paving; however, Staff has no objection to a more nuanced approach that would take into account the availability of drainage facilities in the area and the extent of development being proposed. Staff is confident we can revise the code to continue to require paving in most instances but build in appropriate flexibility- if this is the direction provided by the Planning Commission.

IV. CONCLUSION

The proposed Zoning Ordinance amendment was initiated by the City Council and in accordance therewith, was prepared with feedback received through an appointed Citizens Advisory Committee. The proposed Ordinance has been prepared in accordance with current State legal requirements and caselaw, and as such, staff recommends that the Planning Commission forward a favorable recommendation to the City Council to adopt the proposed Zoning Ordinance, including any modifications thereto that the Planning Commission would like the City Council to consider, and including input on the topics identified in this report.

V. EXHIBITS

A. City Council Resolution No. 22-737
B. Proposed Zoning Ordinance Text
C. Copies of Required Notice Materials

CITY OF BURNS PLANNING & ZONING DEPARTMENT

By: Jay Harland
Contract City Planner

Date: August 1, 2023

Acting Chairperson Garo asked LUP Jay Harland if he had talked with David Glennie and if he was agreeable with the changes being made.

LUP Jay Harland said that the city had received a letter from David Glennie with Telos Development Company, in support of the proposed amendments and revisions to the City of Burns Zoning Ordinance and it should be put into the written record. The letter read as such:

August 7,2023

TELOS

Development
Company, LLC

Via Electronic Delivery

City of Burns Planning Commission
242 S. Broadway Street
Burns Oregon
97720

AGENDA ITEM #7 - REVIEW OF PROPOSED ZONING ORDINANCE PROVISIONS

Commissioner:

I am writing on behalf of Telos Development Co., LLC longtime owners of a large tract of vacant property adjacent to the Steens Mt. Plaza (Rite-Aid, McDonalds, Grocery Outlet) development in support of the proposed amendments and revisions to the City of Burns Zoning Ordinance you are considering this evening.

By way of background, we met with city officials from both the City of Hines and the City of Burns last November to discuss the potential for housing development on portions of the property we have owned since 1990. This discussion was held with the expectation that the Army Corps of Engineers would soon be removing the entirety of the now vacant tracts of land from the existing 100 year flood plain

Conceptually, such development would include a broad variety of housing options including single family and multi family residential options and with varied minimum lot sizes to that could appeal to a cross- section of existing and new Harney County residents

We stressed that, from our point of view, the following objectives would help in moving any such proposal forward expeditiously:

1) Affordability
2) Cooperation with city staffs regarding engineering and development standards.
3) Concurrent consideration by both cities regarding necessary land use approvals, including zoning and Comprehensive Plan amendments
4) Addressing intergovernmental agreements between Burns and Hines for delivery of sewer and water utilities

Generally, we believe both cities were enthusiastic about the potential to provide this type of housing. Burns planning consultant, Jay Harland (CSA Planning) has provided timely advice to our civil engineering firm in the months that have elapsed.

We have been delayed in obtaining a necessary wetlands delineation report on the subject property, which we only received last week. It revealed an existing wetlands area behind the shopping center of about 8 acres. We are now in the process of addressing a revised site plan taking the wetlands into account.

The proposed zoning ordinance amendments address many of the development details that will support the affordability aspect we are seeking. The much ballyhooed "housing crisis" along the I 5 corridor and Central Oregon has created an opportunity for Harney County We hope to develop additional plans and begin the land use approval process in the next 60-90 days and hope those hearings and approvals can be resolved in time to consider initial site work in mid-2024.

We are very pleased with the ability to work cooperatively with the respective city staffs and avoid the bureaucratic logjams that now define Oregon's metropolitan areas.

Thank you for considering my comments in your deliberations

Very truly yours

Dostan

David
Glennie

President

LUP Jay Harland said staffs recommended approach would be to take any testimony on any input from the community about the issues pointed out in the staff report.

There was no community input.

LUP Jay Harland said if there was no community input the commission could now close the hearing. They then would begin going over it and get direction one by one from the Planning Commission on the outstanding things that were discussed in the staff report. He then informed the commissioners that the staff report was now concluded and asked if the commissioners had any questions.

Acting Chairperson Garo asked if there were no further questions or comments if they could close the hearing.

LUP Jay Harland asked once again if there was anyone in the audience that wished to testify.

Acting Chairperson Garo said there was not and closed the hearing.

LUP Jay Harland said with that he wanted to go over the items that were in the staff report, as there were things they would like additional direction on. First thing is the new zooming district classification. He asked if any of the commissioners had any issues or concerns with that concept moving forward to the council.

All the Commissioners were in consensus on moving it forward to council.

Acting Chairperson Garo expressed how great he thought that change was.

LUP Jay Harland said not much was changing in respects to the commercial zones and employment zones. GC and the business part will continue to remain pretty much the same as it exists in the code today. He said the only other sort of structural change to the Zoning Ordinance is going from the two industrial light and heavy industrial zoning districts to a single industrial district. He said the list of permissible uses was very similar between the two, so it didn't make sense to have two separate districts. That was something they would put in the adopting ordinance. It will say that it's the intent of the council to adopt a new zoning map that will create a single light industrial zone. But as an interim matter, any land zone, light industrial, or heavy industrial, will be subject to the industrial district in the new code. He said that's kind of how those sorts of mismatches are dealt with and they will write it into the adopting ordinance and build a sort of a little scaffolding to get them to when they can adopt a new zoning map that will just have the one industrial district. That was all on the employment stuff. Then the other small change policy change at a zoning district level is reducing the minimum lot size down to 20 acres for the open space and that was just based on CSA's opinion that 40 acres is giant for things inside an urban growth boundary. Even 20 acres is a pretty good size piece of dirt, and there might be reasons why it might make sense to be able to create a smaller lot in those open space areas.

Acting Chairperson Garo asked if there would be good reason to knock it down further to maybe 10 acres instead of 20. He said the city lots where he is at are 1 acre lots. Even at 10 acres that is a pretty

big chunk to put into the Urban Growth Boundary. He thought if we left it at 20 acres that no one would be able to use it.

LUP Jay Harland said it was purely a policy choice. He informed the commissioners that 10 acres is still a lot inside the UGB. He said just because you have open space doesn't mean it needs to be zoned open space. He said open space was an allowed use in all zones really. Another way to deal with that may be to rezone it out of open space to something else and then divide it. He said if the commission said that they the felt 10 acres was more appropriate, then staff had no issue with changing it. He then let Acting Chairperson Garo know there was another person on zoom and asked if he would catch them up to where they were in the meeting.

Acting Chairperson Garo agreed and went over what had happened in the meeting up to that moment.

LUP Jay Harland asked if all the commissioners were in favor of the Chairs suggestion to bring it to 10 acres instead of 20 acres.

Commissioner Keady and Commissioner Attleberger said they were in favor of it.

LUP Jay Harland said pertaining to how many dwellings can be on one parcel, the proposed Ordinance would allow for two or more detached dwellings on a single parcel. He said that was normally how multifamily developments are done. The new code would additionally allow them in the S Far One and S Far Seven Zones. From staff's standpoint what really matters is that the overall density is met and still that the density of the four units to the acre and the seven units to the acre, and all the setback requirements will still need to be met for lots that have more than one dwelling. He informed the commissioners that this change is something that is kind of odd in the current code. If someone wants to do a duplex in the new S Far Four Zone, they will have to have a bigger lot than is required to create two lots or a dwelling on each one which they didn't think made since at all. LUP Jay Harland then asked if any of the Commissioners had any issue with this section.

Acting Chairperson Garo, Commissioner Keady and Commissioner Attleberger had no issues with anything that was discussed.

LUP Jay Harland said when they were first starting to work with the existing Burns Zoning Ordinance, one thing that jumped out at them was that you could have a medical office as big as you wanted in any Residential Zone as an outright permitted use. He said he has never seen that before and it was a concern for some Planning Commissioners, people on the Code Advisory Committee, and some of the City Council as well. He said as staff dug into for technical reasons, staff was recommending that the city leave that alone at this point. There are two reasons for that. One is that however they exactly handle it, it is going to take some effort on how that is gone about because there was some discussion on whether they wanted to leave a little of it or not and questions such as that. The second was the technical issue, which for the most part the new Zoning Ordinance is not restricting land use, but for the most part the

things the new Ordinance is doing is keeping it the same or allowing people to do some stuff they weren't allowed to do before. So technically it was being more flexible. He said in Oregon when you do a Legislative Amendment that disallows uses that were allowed previously, you have to provide a Ballot Measure 56 Notice. This has a very specific language and has to go out to every single property owner that is affected, which would mean every property with the RS Zoning if they were going to disallow the medical office or make them a Conditional Use. He said this can be quite alarming to property owners when they get it. LUP Jay Harland said staff's recommendation is that the city put that one issue to the side, get the new code in place, and come back as a separate legislative matter to address that particular issue.

Commissioner Keady asked if the city currently some of these establishments that fall under this and if some of those were up by the Hospital.

LUP Jay Harland said yes, a lot of those were up in that area.

Commissioner Keady said if we leave it where it is with the current code someone could build a medical office anywhere.

LUP Jay Harland said that was correct. He said staff was recommending they maintain the status quo for procedural reasons for the code amendment, not because they believe it is a good idea to put any kind of medical office regardless of scale as an outright permitted use in a residential zone.

Commissioner Keady asked if there were any restrictions that he knew of that can do that for parking or hours of operation currently in the code.

LUP Jay Harland said not for hours of operation and off-street parking requirements would still apply but they couldn't say no to the nature of the use under the current ordinance.

Commissioner Keady felt that by it stating medical and other professional use, it was very broad.

LUP Jay Harland said it was pretty much any sort of office use.

Commissioner Keady thought it would be nice to change that at some point.

LUP Jay Harland said that it was on their list, and they plan to follow up shortly after adopting the new code.

Acting Chairperson Bryan Garo said he was in favor of tabling it and re addressing it later.

Commissioner Attleberger said she also agreed with that.

LUP Jay Harland informed them that another portion they worked on was with the short-term rentals in residential zones. The direction they got from the Advisory Committee and to some extent the Planning Commission as well is that the new code would have a limitation on concentration to only one per city block and only in Residential Zones. He said there was also some text in there that makes it clear that they also have to have a current Business License and comply with any other Municipal Code provisions in the ordinance.

Commissioner Keady asked what the city would do if there were already more than one per city block and if they would be grandfathered in.

LUP Jay Harland said that was correct and is something the the Planning Commission would want to specifically say. They'd say, they recommend that the council treat those that are preexisting and properly licensed that exceed that density, to be preexisting non-conforming.

Commissioner asked if any of the Air B&Bs currently had Business Licenses.

City Clerk Tiffany Leffler said that there were ones that were licensed, but she'd have to look into it more to let him know more specifics.

Commissioner Keady said he worried that people may try and say they were already preexisting if there is no proof of the existing ones.

LUP Jay Harland said it was up to them to prove that they were operating a business. He then informed them that another way they could handle it would be to move forward with this but as part of the ordinance they specifically say that the council directs staff to email or mail to the ones they can identify and let them know a new ordinance passed and it is restricted to one per city block. Inform them that it is in their best interest to go to the city and document the existence of their short-term rental in the next 90 days. He believes this could narrow down the opportunity for people to try and say they already existed if they in fact did not. He said he would like to get some direction for staff to proactively within a month of the ordinance passing, to send some communication to the ones they can identify as already existing and ask them to attest to that.

Acting Chairperson Garo asked how they planned on going about identifying those.

LUP Jay Harland said he would use Google and Air B&B and also any information the city may have. He then asked the Commission if they wanted to go this route with it and figure out more of the specifics when they brought it to council.

The commissioners all agreed they wanted to.

LUP Jay Harland informed them on the next item they worked on which was RV Parks. He didn't believe it was allowed anywhere it the current ordinance. He said staff recommended that be an allowed use subject to design standards.

There was more discussion had on RV Parks that already exist.

The commissioners all agreed they were good with this.

LUP Jay Harland mentioned the next item which was entertainment establishments that have outdoor uses. The current code wasn't clear on what to do with those types of establishments, so staff was purposing there be specific hours of operation and noise level parameters in the new code. It will be clear that the use is allowed in commercial zones but impose some sanity regulations to prevent disruption of surrounding properties.

Commissioner Keady asked him to define the entertainment establishment, such as the Palace they just finished on Main Street.

LUP Jay Harland informed him that would be considered an entertainment establishment. He said the idea was to allow it because the current ordinance is unclear on whether it is allowed, but they would also impose some kind of standards to that.

Commissioner Attleberger agreed and thought maybe a 11 p.m. cut off or something like that.

Planning Associate Seth Adams went back to answer Commissioner Keady's question about defining an entertainment establishment. It is defined as the land use which is the operation of facilities that enables patrons to engage in cultural entertainment or recreational interests. Such business included but are not limited to cinema and theater, night clubs, concert halls, amusement parks, arcades, billiard rooms, card rooms, comedy clubs, etc. He believed the Palace did fall into that category.

Commissioner Keady asked how they would measure the noise level. He asked if there was a piece of equipment that could do that.

LUP Jay Harland said if there is a real issue with it code enforcement can get a special piece of equipment to check it. He also said there is an app that could almost measure it just as good.

There was more discussion on ways to monitor noise levels and all commissioners agreed they were ok with this portion as well.

LUP Jay Harland noticed that they had not mentioned anything about before 7 p.m. He said he thinks they thought originally it was night activity. He thought maybe it was a typo and it was supposed to be before 7 a.m., and it didn't make sense to not be able to have a concert before 7 p.m.

Planning Associate Seth Adams said he thought they were going more for not regulating it before 7 p.m.

LUP Jay Harland informed him if that was what it was supposed to say it did not and they needed to change that. He asked Seth to make a note of it.

The next item was historical landmarks. There is a provision in the current ordinance, but they didn't actually think it applied to anything. He wasn't sure if they wanted it left but they wanted it to bring it to their attention.

Planning Associate Seth Adams informed the commissioners that the code was last modified in 2018.

Commissioner Keady said he believed that was a push to get Burns and the County as a certified local government so they could designate properties and apply for grant funding. They didn't have to designate properties but they had to be a certified local government so they could designate properties. He recommended keeping it there if someone did eventually want to take advantage of it.

LUP Jay Harland said he was glad there was background to it, and they had no problem leaving it there.

The final item for discussion was the parking area paving. The current Zoning Ordinance is black and white about when you do new building the required parking has to be paved. They have had a couple projects now that not paving the entire parking worked out better for drainage. He said they would come up with a language that requires paving generally but builds in flexibility for the Planning Commission to allow something less than 100% to be paved without a need for a variance.

Commissioner Keady said he understood the times where they have to be flexible and there might be times, they may not need to pave even though it's in the code. He worries that allowing them to do that would cause them to then have areas to park that become unattractive. A paved parking lot is more attractive if it's paved then a gravel parking lot that has weeds, no boundaries, no lines, and things such as that. He wanted to know if there was any way there could be a middle ground. For example, it may not have to be paved but it needs to be maintained to a certain level. He felt there needed to be some way to differentiate whether it was a parking lot of just half a lot. He just didn't want it to backfire.

LUP Jay Harland said that his view on it was no that they would not be providing flexibility as a cost savings measure but have a standard for what the non-paved area is to allow and what standards it

needs to be at. He then informed Planning Associate Seth Adams that they would draft something up for that.

The commissioners agreed that were all ok with that.

Acting Chairperson Garo asked if there was something in the current ordinance on beautification standards of a lot.

LUP Jay Harland informed him that there was not. Unless they are coming in for a building permit that is more of a Municipal Code issue.

Interim City Manager asked if ADUs were addressed in the new code.

LUP Jay Harland informed her they were allowed. He said they are required to be allowed because Burns is big enough, but they must be up to code.

Planning Associate Seth Adams said it was on page 99 of code.

LUP Jay Harland said staffs suggested motion is to recommend the City Council adopt the new Zoning Ordinance for the City of Burns with changes from the Planning Commission draft to the City Council draft that reflects the direction provided by the council during this evening's deliberations.

Commissioner Keady said so moved. Commissioner Attleberger seconded the motion. All ayes.

OLD BUSINESS

None

There was no further discussion.

The next meeting will be September 6, 2023, at 6:00 p.m.

Commissioner Keady made a motion to adjourn at 7:39 p.m. Commissioner Attleberger seconded the motion. All ayes.

Tiffany Leffler, City Clerk

Bryan Garo, Acting Chairperson

PLANNING COMMISSION REPORT

Adoption of New FEMA Flood Insurance Rate Maps & Associated Development Code Amendment

Planning File No. LAPF-002-2023

STAFF REPORT

APPLICANT: City of Burns

PLANNING FILE: LAPF-002-2023

NATURE OF APPLICATION: A proposed legislative amendment to adopt new FEMA Flood Insurance Rate Maps (FIRMs) for the City of Burns, and associated amendments to the flood hazard regulations of Section 18.30.325 of the City of Burns Zoning Ordinance.

STAFF ANALYSIS: The Federal Emergency Management Agency (FEMA) has prepared an updated Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) for Harney County and its incorporated areas. *See,* Exhibit A. The FIS and related FIRMs revise and update information on the existence and severity of flood hazards within the study area, which includes the City of Burns, and will be used to establish actuarial flood insurance rates and assist communities in their efforts to implement their floodplain management regulations. The updated FIS and FIRMs are slated to take effect on February 8, 2024, and need to be adopted by the City on or before that date in order for the City to remain in compliance with its obligations under the National Flood Insurance Program in which it is a participant. As part of the formal adoption of the updated FIS and FIRMs, an amendment to the Flood Hazard Area regulations in Section 18.30.325 of the Zoning Ordinance is necessary to update the FIS effective date and the FIRM panel numbers that are referenced therein. *See,* Exhibit B.

I. BACKGROUND INFORMATION

A. Current Flood Hazard Regulations: The City's current flood hazard regulations were drafted in accordance with FEMA and DLCD guidance and first adopted by the City Council in March of 2022. Those regulations were directly carried over to the new City of Burns Development Code that was adopted on September 27, 2023, and took effect on October 27, 2023.

B. Agency Coordination and Public Notice: Pursuant to State legal requirements and the City of Burns Comprehensive Plan, the proposed amendment to the Zoning Ordinance was provided to the Department of Land Conservation and Development, and the Federal Emergency Management Agency (FEMA) for review and comment. The proposed Zoning Ordinance amendment was also posted to the City's website for

public review. At the time this report was prepared, staff had not received any comments from notified agencies or members of the public.

II. APPLICABLE CRITERIA

As a legislative amendment proposal, the Planning Commission is authorized to provide a written recommendation to the City Council which will decide whether to adopt the updated FIS and FIRMs, as well as the proposed Zoning Ordinance amendment.

III. KEY ISSUES & TOPICS FOR CONSIDERATION

The proposed text of the Zoning Ordinance simply changes the effective date of the FEMA Flood Insurance Study (FIS) and the accompanying Flood Insurance Rate Maps (FIRMs) that pertain to the City of Burns and are referenced in Subsection 18.30.325.3.B of the Zoning Ordinance. The amendment also includes some additional definitions that pertain specifically to the flood hazard regulations. These definitions, like the others in Section 18.30.325, come from FEMA and DLCD guidance and were inadvertently omitted in the version of the new Zoning Ordinance that the City Council adopted in September.

IV. UPDATED FLOODPLAIN ADMINISTRATION RESOLUTION

Staff has also prepared an updated City Council resolution outlining the duties and responsibilities of the Floodplain Administrator. There are no substantive changes within the proposed resolution update as the modifications are limited to section number references that will match those of the recently adopted new Zoning Ordinance. *See,* Exhibit C.

V. CONCLUSION

The updated FIS and FIRMs were prepared by FEMA and their adoption is necessary to ensure the City's continued participation in the National Flood Insurance Program. The proposed Zoning Ordinance amendment is also necessary to update the text to reference the effective date for the new FIS and the FIRM panel numbers that are applicable to Burns. Staff recommends that the Planning Commission forward a favorable recommendation to the City Council to adopt the new FIS and FIRMs, as well as the proposed Zoning Ordinance amendment.

VI. EXHIBITS

A. Revised Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs)
B. Proposed Zoning Ordinance Amendment Text
C. Proposed Floodplain Administrator Resolution
D. Copies of Required Notice Materials

CITY OF BURNS PLANNING & ZONING DEPARTMENT

By: Jay Harland
Contract City Planner

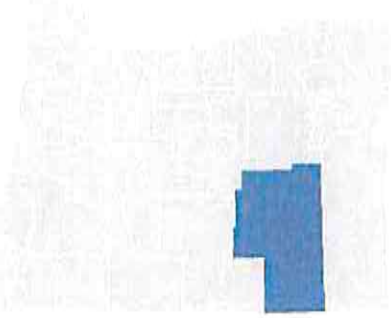
Date: December 26, 2023

EXHIBIT A

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BURNS PAIUTE RESERVATION	410281
BURNS, CITY OF	410084
HARNEY COUNTY, UNINCORPORATED AREAS	410083
HINES, CITY OF	410085

FEMA

REVISED:

FEBRUARY 8, 2024

FLOOD INSURANCE STUDY NUMBER
41025CV000B
Version Number 2.6.5.6

TABLE OF CONTENTS
Volume 1

Figures

Tables

Volume 1
Exhibits

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
HARNEY COUNTY, OREGON

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were

built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Harney County, Oregon.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Burns Paiute Reservation	410281	17120001, 17120002	41025C1402F, 41025C1403E[1], 41025C1404F, 41025C1406F, 41025C1408F, 41025C1412F, 41025C1440E, 41025C1445E, 41025C1475E, 41025C1500E, 41025C1525E[1], 41025C1850E	
Burns, City of	410084	17120002	41025C1402F, 41025C1404F, 41025C1406F, 41025C1408F	

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Harney County, Unincorporated Areas	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C0025E[1], 41025C0050E[1], 41025C0075E[1], 41025C0100E[1], 41025C0125E[1], 41025C0150E[1], 41025C0175E[1], 41025C0200E[1], 41025C0225E[1], 41025C0250E[1], 41025C0275E[1], 41025C0300E[1], 41025C0320E, 41025C0325E[1], 41025C0330E, 41025C0335E, 41025C0340E, 41025C0345E, 41025C0375E[1], 41025C0400E, 41025C0425E, 41025C0450E[1], 41025C0475E[1], 41025C0500E[1], 41025C0525E[1], 41025C0550E[1], 41025C0575E[1], 41025C0595E, 41025C0600E[1], 41025C0615E, 41025C0620E, 41025C0625E[1], 41025C0630E, 41025C0635E, 41025C0640E, 41025C0645E, 41025C0655E, 41025C0660E, 41025C0675E[1], 41025C0685E, 41025C0700E[1], 41025C0725E[1], 41025C0750E[1], 41025C0775E, 41025C0800E, 41025C0825E, 41025C0850E[1], 41025C0875E[1], 41025C0900E[1], 41025C0925E[1], 41025C0950E[1], 41025C0975E[1], 41025C1000E[1], 41025C1005E, 41025C1010E, 41025C1015E[1], 41025C1020E, 41025C1036F, 41025C1037F, 41025C1038F, 41025C1039F, 41025C1043F, 41025C1044F, 41025C1045F[1], 41025C1050E[1], 41025C1065E, 41025C1075E[1], 41025C1100E[1], 41025C1125E[1], 41025C1150E[1], 41025C1175E[1], 41025C1200E[1], 41025C1225E[1], 41025C1250E[1], 41025C1275E[1], 41025C1300E[1], 41025C1325E[1], 41025C1350E[1], 41025C1375E[1], 41025C1400E[1], 41025C1401E[1], 41025C1402F, 41025C1403E[1], 41025C1404F, 41025C1406F, 41025C1407F, 41025C1408F, 41025C1409F	

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Harney County, Unincorporated Areas (continued)	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C1411E, 41025C1412F, 41025C1415E, 41025C1416E, 41025C1420E, 41025C1430E, 41025C1435E, 41025C1440E, 41025C1445E, 41025C1475E, 41025C1500E, 41025C1525E[1], 41025C1550E[1], 41025C1575E[1], 41025C1600E[1], 41025C1625E[1], 41025C1650E[1], 41025C1675E[1], 41025C1700E, 41025C1725E, 41025C1750E, 41025C1775E, 41025C1800E, 41025C1825E, 41025C1850E, 41025C1875E, 41025C1900E, 41025C1925E, 41025C1950E[1], 41025C1975E[1], 41025C2000E[1], 41025C2025E[1], 41025C2050E[1], 41025C2075E, 41025C2100E, 41025C2125E, 41025C2150E, 41025C2175E, 41025C2200E, 41025C2225E, 41025C2250E, 41025C2275E, 41025C2300E, 41025C2325E, 41025C2350E, 41025C2375E[1], 41025C2400E[1], 41025C2425E[1], 41025C2450E[1], 41025C2475E[1], 41025C2500E, 41025C2525E, 41025C2550E, 41025C2575E, 41025C2600E, 41025C2625E[1], 41025C2650E, 41025C2675E[1], 41025C2700E, 41025C2725E[1], 41025C2750E[1], 41025C2775E[1], 41025C2800E[1], 41025C2825E[1], 41025C2850E[1], 41025C2875E[1], 41025C2900E[1], 41025C2925E, 41025C2950E, 41025C2975E, 41025C3000E, 41025C3025E[1], 41025C3050E[1], 41025C3075E[1], 41025C3100E[1], 41025C3125E[1], 41025C3150E[1], 41025C3175E[1], 41025C3200E[1], 41025C3225E[1], 41025C3250E[1], 41025C3275E[1], 41025C3300E[1], 41025C3325E, 41025C3350E, 41025C3375E, 41025C3400E[1], 41025C3425E[1], 41025C3450E[1], 41025C3475E[1]	

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Harney County, Unincorporated Areas *(continued)*	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C3500E[1], 41025C3525E[1], 41025C3550E[1], 41025C3575E[1], 41025C3600E[1], 41025C3625E[1], 41025C3650E[1], 41025C3675E[1], 41025C3700E[1], 41025C3725E[1], 41025C3750E[1], 41025C3775E[1], 41025C3800E[1], 41025C3825E[1], 41025C3850E[1], 41025C3875E[1], 41025C3900E[1], 41025C3925E[1], 41025C3950E[1], 41025C3975E[1], 41025C4000E[1], 41025C4025E[1], 41025C4050E[1], 41025C4075E[1], 41025C4100E[1], 41025C4125E[1], 41025C4150E[1], 41025C4175E[1], 41025C4200E[1], 41025C4225E[1], 41025C4250E[1], 41025C4275E[1], 41025C4300E[1], 41025C4325E[1], 41025C4350E[1], 41025C4375E[1], 41025C4400E[1], 41025C4425E[1], 41025C4450E[1], 41025C4475E[1], 41025C4500E[1], 41025C4525E[1], 41025C4550E[1], 41025C4575E[1], 41025C4600E[1], 41025C4625E[1], 41025C4650E[1], 41025C4675E[1], 41025C4700E[1], 41025C4725E[1], 41025C4750E[1], 41025C4775E[1], 41025C4800E[1], 41025C4825E[1], 41025C4850E[1], 41025C4875E[1], 41025C4900E[1], 41025C4925E[1], 41025C4950E[1], 41025C4975E[1], 41025C5000E[1], 41025C5025E[1], 41025C5050E[1], 41025C5075E[1], 41025C5100E[1], 41025C5125E[1], 41025C5150E[1], 41025C5175E[1], 41025C5200E[1], 41025C5225E[1], 41025C5250E[1], 41025C5275E[1], 41025C5300E[1], 41025C5325E[1], 41025C5350E[1], 41025C5375E[1], 41025C5400E[1], 41025C5425E[1], 41025C5450E[1], 41025C5475E[1], 41025C5500E[1], 41025C5525E[1], 41025C5550E[1], 41025C5575E[1], 41025C5600E[1], 41025C5625E[1],	

[1] Panel Not Printed

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Harney County, Unincorporated Areas *(continued)*	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C5650E[1], 41025C5675E[1], 41025C5700E[1], 41025C5725E[1]	
Hines, City of	410085	17120002	41025C1404F, 41025C1411E, 41025C1412F	

[1] Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1-percent-annual-chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1-percent-annual-chance and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance

purposes. Community map repository addresses are provided in Table 30, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

- The initial Countywide FIS Report for Harney County became effective on April 20, 2022. Refer to Table 27 for information about subsequent revisions to the FIRMs.

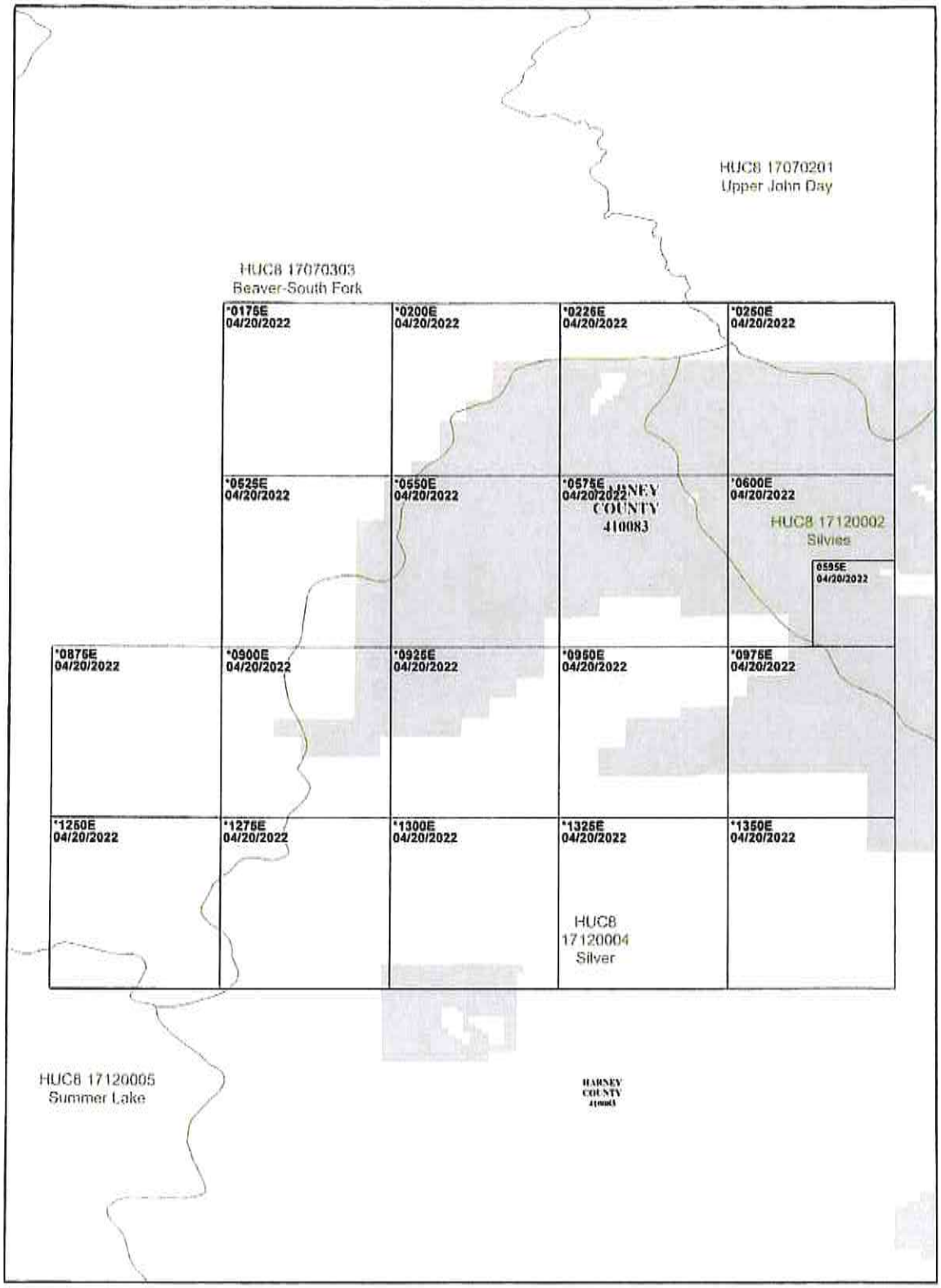
- FEMA does not design, build, inspect, operate, maintain, or certify levees. FEMA is responsible for accurately identifying flood hazards and communicating those hazards and risks to affected stakeholders. FEMA has identified one or more levee systems in this jurisdiction summarized in Table 8 of this FIS Report. For FEMA to accredit the identified levee systems, the levee systems must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Information on the levee systems in this jurisdiction can be obtained from the USACE National Levee Database (https://levees.sec.usace.army.mil/). For additional information, the user should contact the appropriate jurisdiction floodplain administrator and the levee owner or sponsor.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/flood-maps/tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Harney County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.

Figure 1: FIRM Index



1 inch = 25,109 feet 1:301,308

0 12,500 25,000 50,000 Feet

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

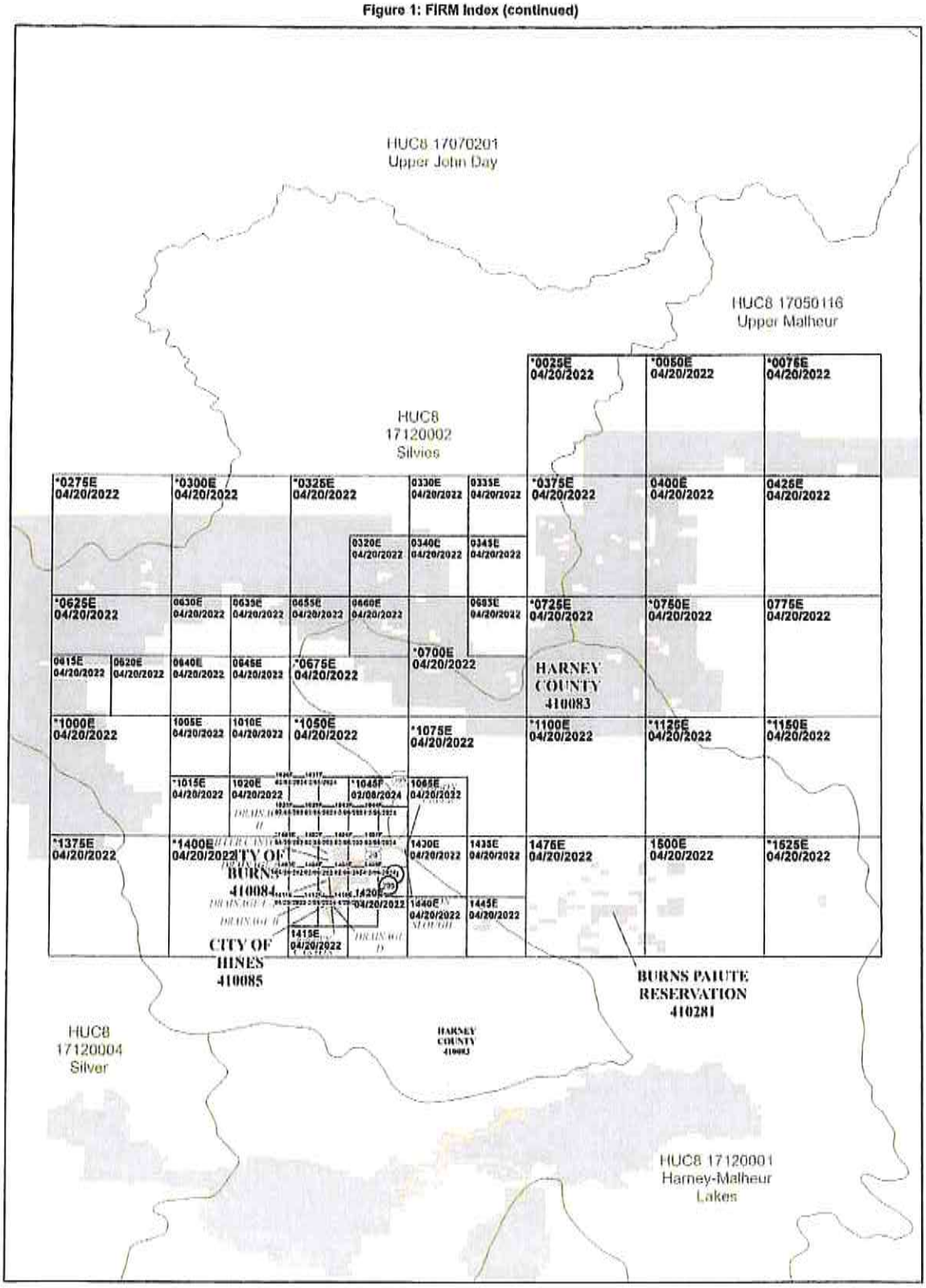
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 1 OF 8
PANELS PRINTED:
0595

MAP NUMBER
41025CIND1B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 35,153 feet 1:421,831

0 15,000 30,000 60,000 90,000 feet

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

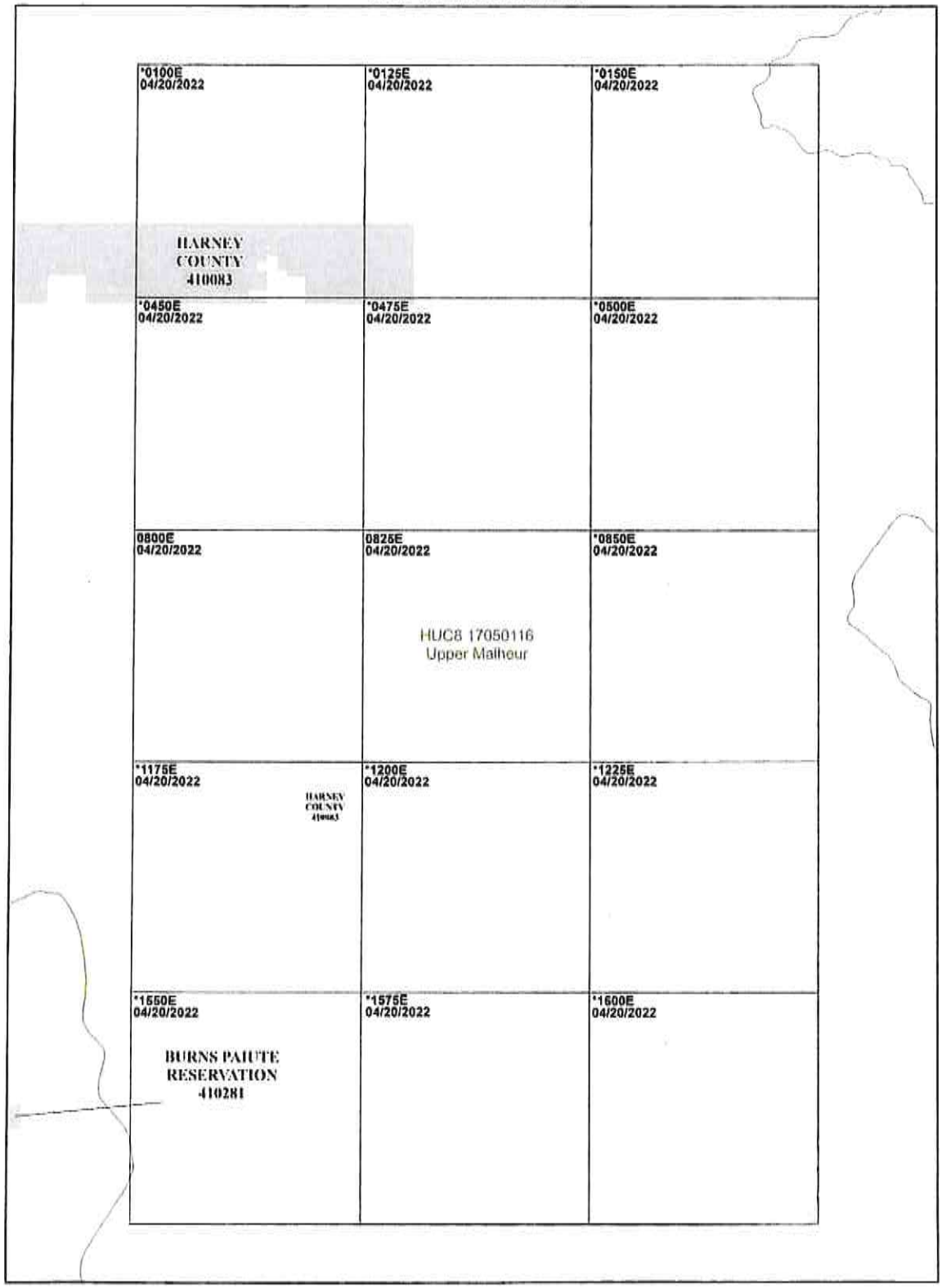
HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PANEL 2 OF 2

PANELS PRINTED:
0320, 0330, 0335, 0340, 0345, 0400, 0425, 0615, 0620, 0630, 0635, 0640, 0645, 0655, 0660, 0685, 0775, 1005, 1010, 1020, 1030, 1037, 1038, 1039, 1043, 1044, 1065, 1402, 1404, 1406, 1407, 1408, 1409, 1411, 1412, 1415, 1416, 1420, 1430, 1435, 1440, 1445, 1475, 1500

MAP NUMBER
41025CIND2B

EFFECTIVE DATE
February 06, 2024

Figure 1: FIRM Index (continued)



1 inch = 16,999 feet 1:223,191

0 5,000 10,000 20,000 30,000 feet

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

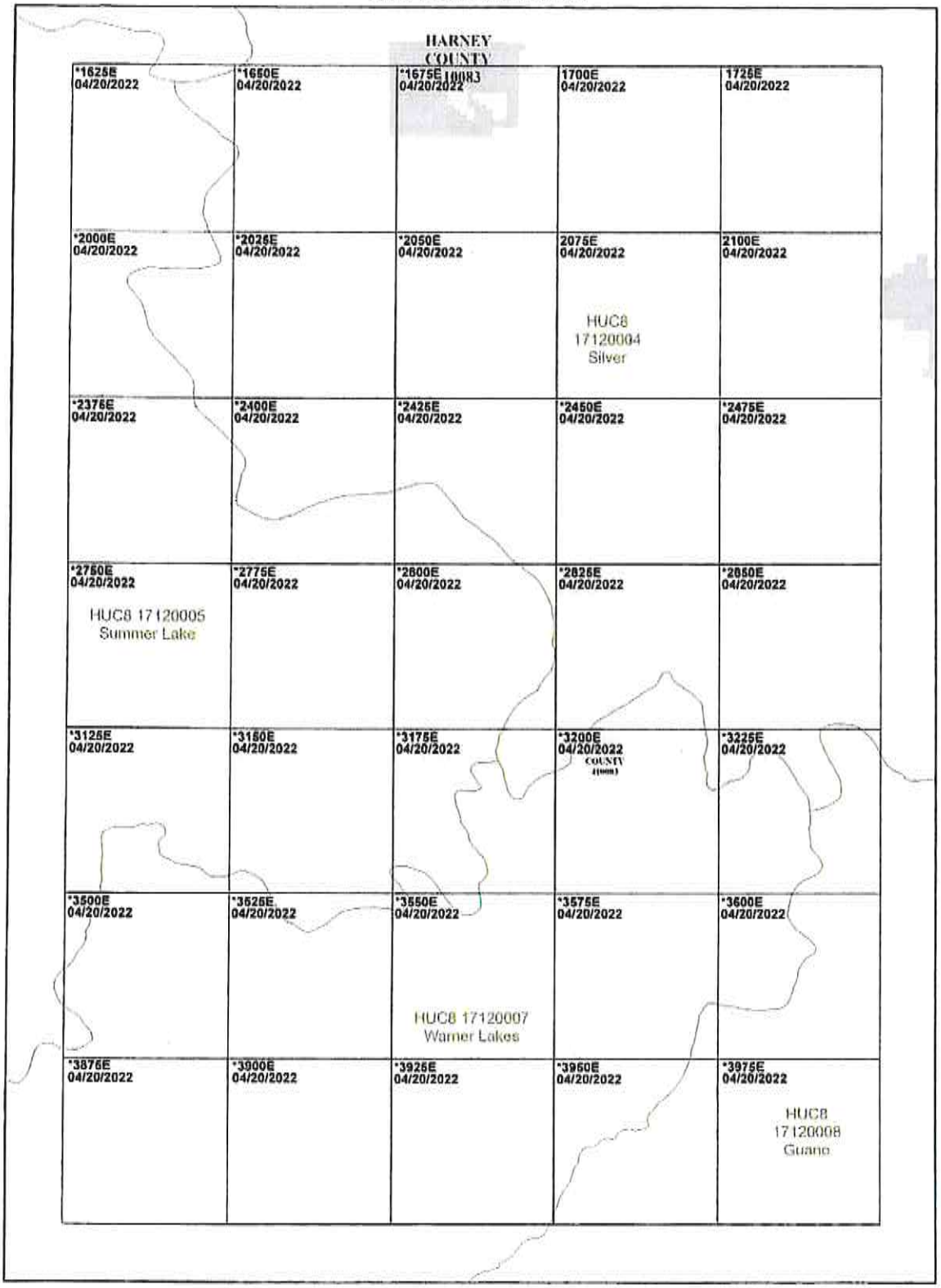
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 1 OF 1
PANELS PRINTED:
0800, 0825

MAP NUMBER
41025CIND3B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 20,039 feet 1:312,467

0 10,000 20,000 40,000 60,000 feet

Map Projection
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

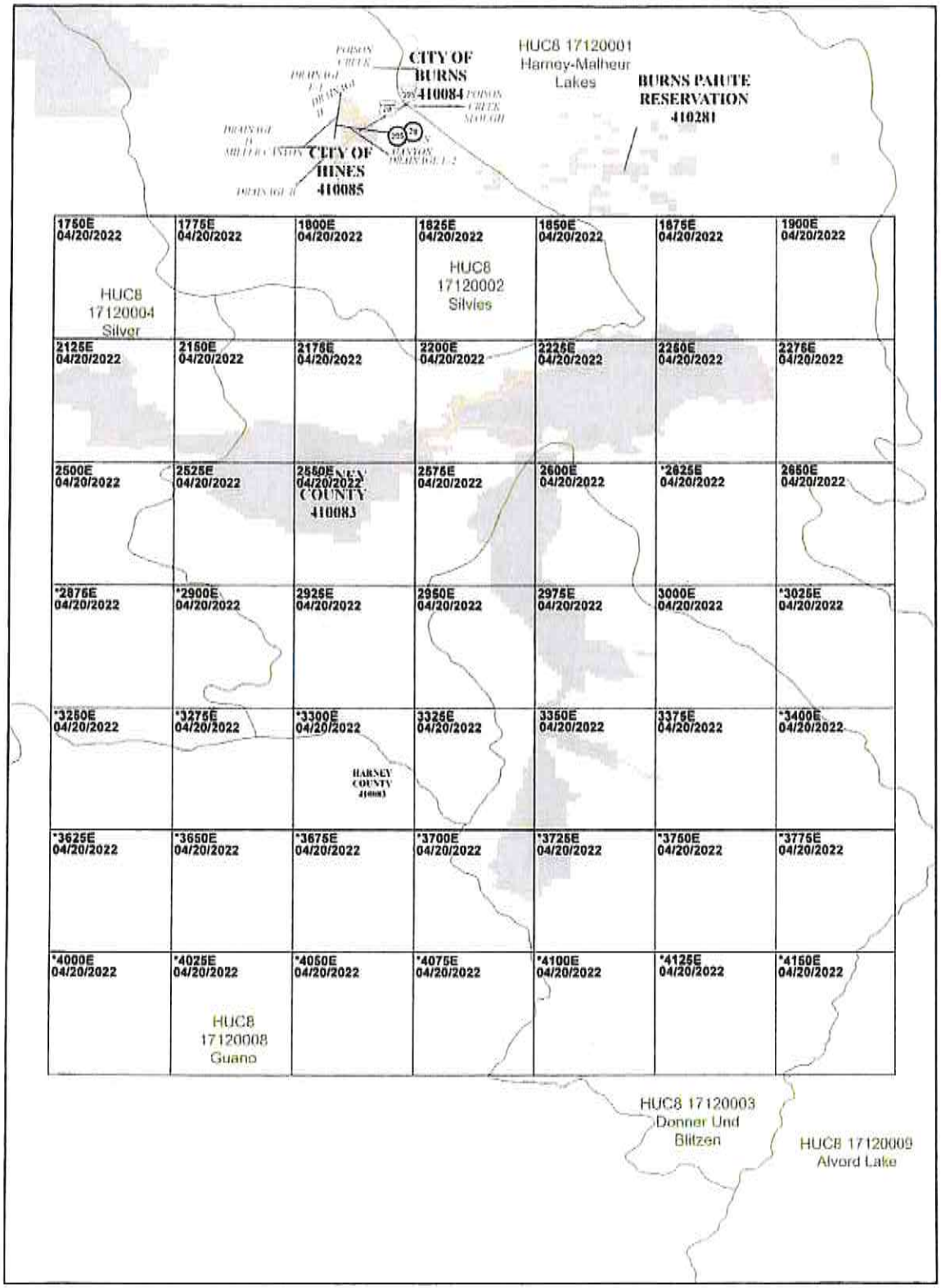
HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 4 OF 8

PANELS PRINTED:
1700, 1725, 2075, 2100

MAP NUMBER
41025CIND4B

EFFECTIVE DATE
February 09, 2024

Figure 1: FIRM Index (continued)



1 inch = 35,153 feet 1:421,831

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

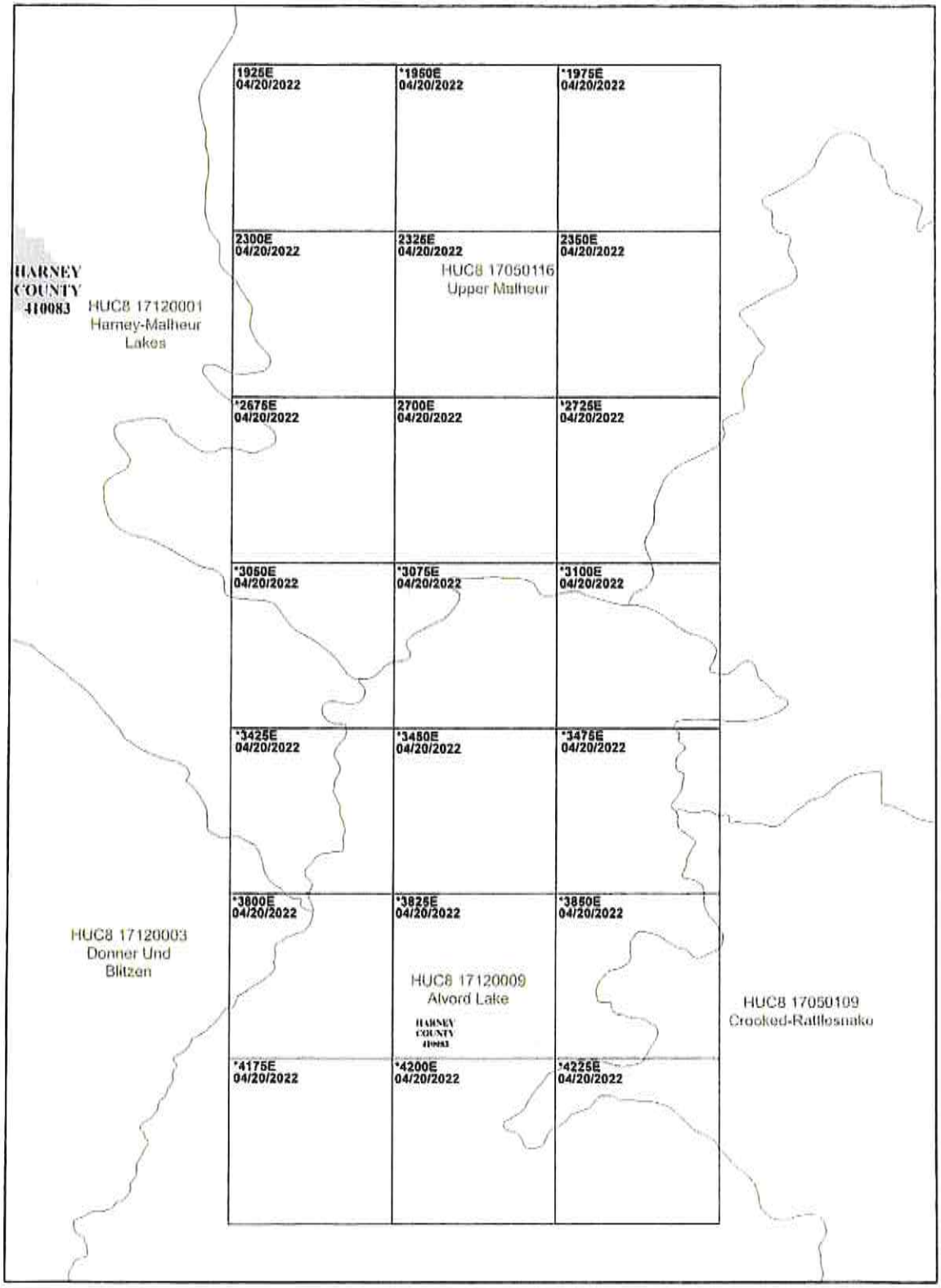
HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 5 OF 9

PANELS PRINTED:
1750, 1775, 1800, 1825, 1850, 1875, 1900, 2125, 2150, 2175, 2200, 2225, 2250, 2275, 2500, 2525, 2550, 2575, 2600, 2625, 2925, 2950, 2975, 3000, 3325, 3350, 3375

MAP NUMBER
41025CIND5B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 20,039 feet 1:312,467

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

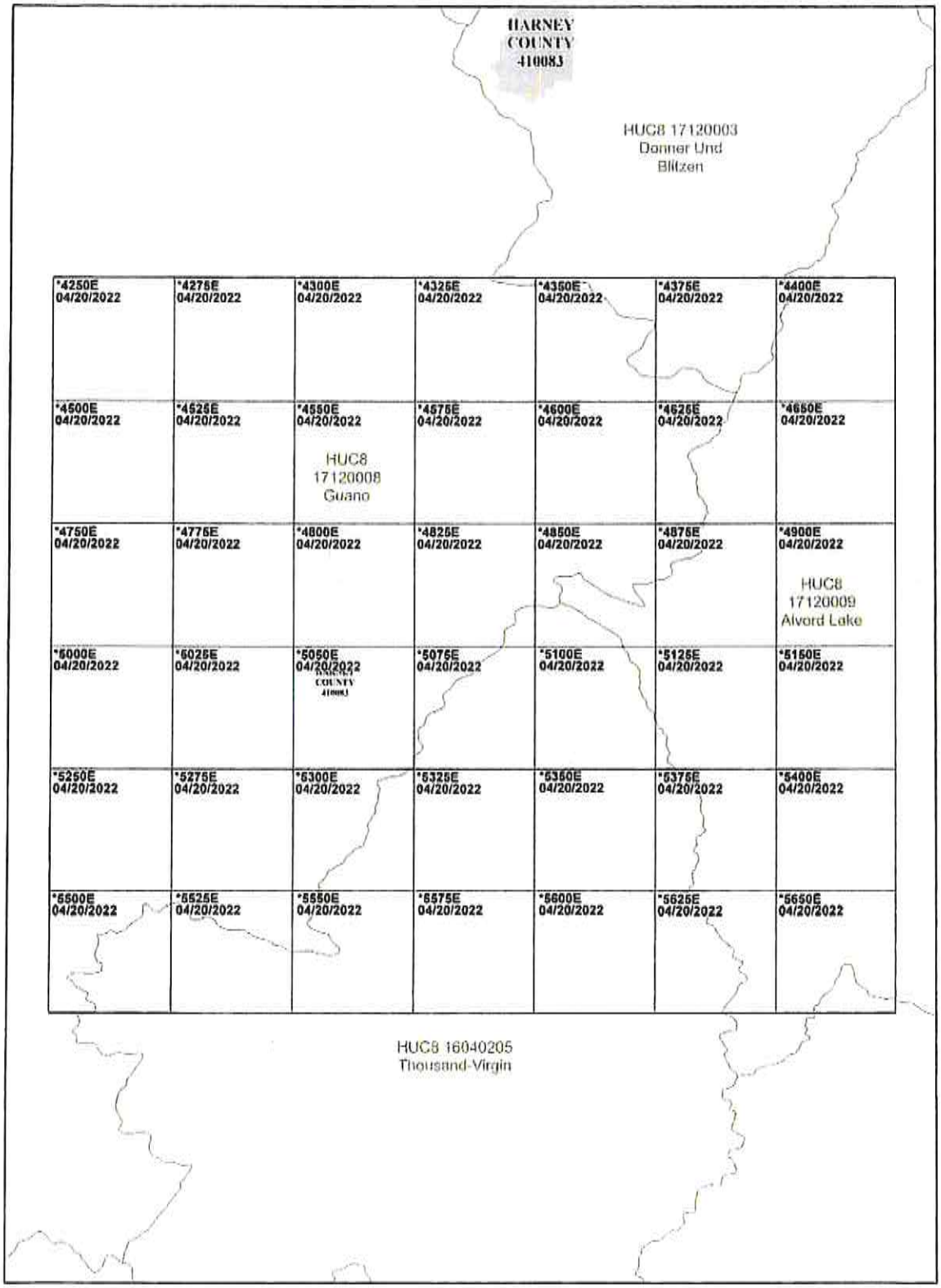
SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX
HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 6 OF 8
PANELS PRINTED:
1925, 2300, 2325, 2350, 2700

MAP NUMBER
41025C1NO0B
EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 35,153 feet 1:421,831

0 15,000 30,000 60,000 90,000 feet

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

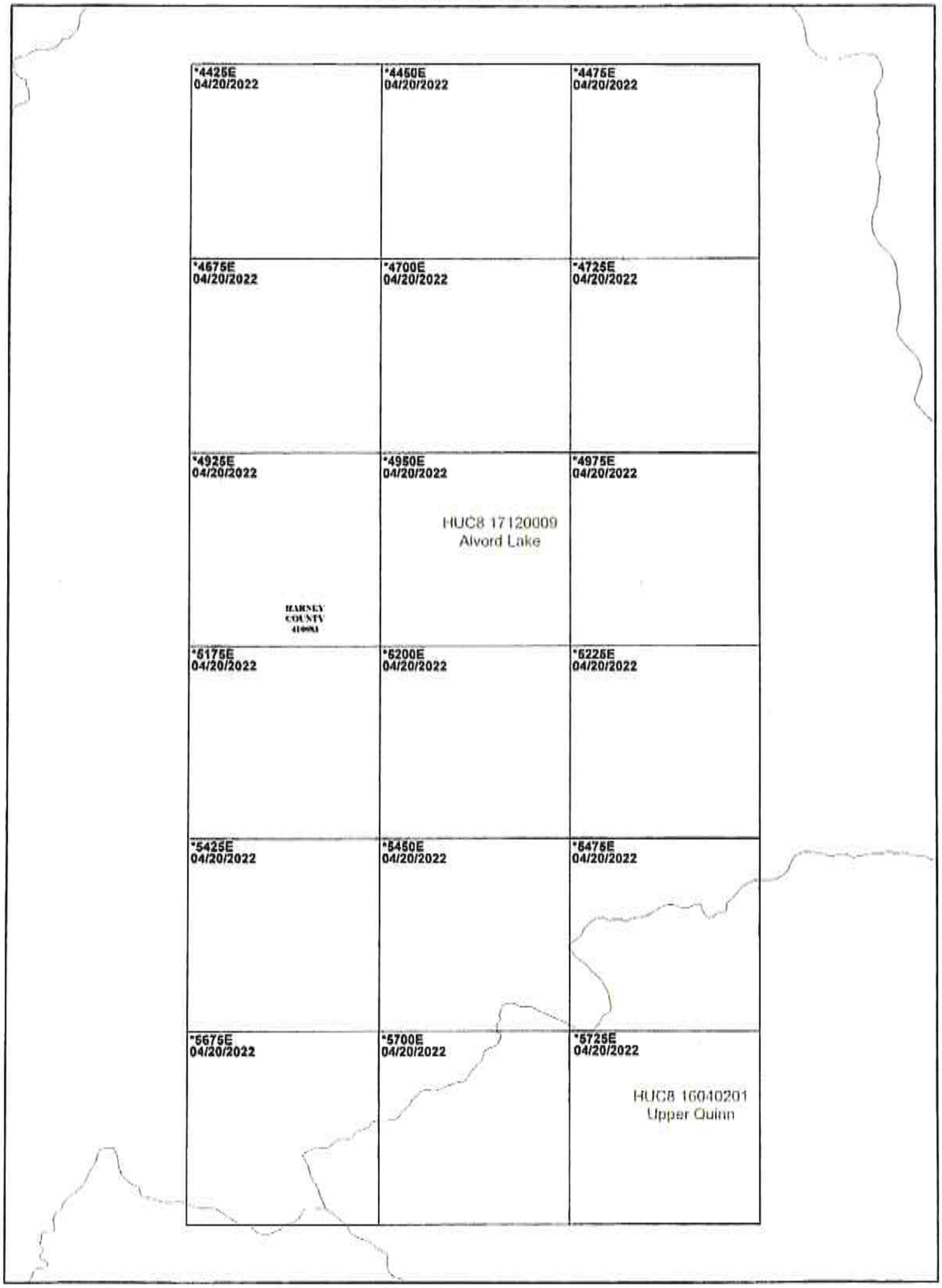
HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 7 OF 8

PANELS PRINTED:

MAP NUMBER
41025CIND7B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 22,319 feet 1:267,829

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS
PAGE 8 OF 8
PANELS PRINTED:

MAP NUMBER
41025CIND0B

EFFECTIVE DATE
February 08, 2024

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood 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 this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Mapping and Insurance eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 27 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2: FIRM Notes to Users, continued

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may have reduced flood hazards due to flood control structures. Refer to Section 4.3 "Dams and Other Flood Hazard Reduction Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was the North American Datum of 1983 (NAD83), GRS 1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988 (NAVD88). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 30 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM panels dated 04/20/2022 was provided in digital format by the Oregon Department of Geology and Mineral Industries, the Oregon Department of Transportation, the Bureau of Land Management, the United States Geological Survey and the United States Department of Agriculture - Farm Service Agency (USDA-FSA) Aerial Photography Field Office as part of the National Agriculture Imagery Program (NAIP). NAIP data was derived from digital orthophotography at a 1-meter resolution from photography dated 2016. Basemap information for FIRM panels dated February 8, 2024 was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Dates include most recently refreshed data. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Harney County, Oregon, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 27 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

Figure 2: FIRM Notes to Users, continued

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Harney County, Oregon, effective February 8, 2024.

NON-ACCREDITED LEVEE SYSTEM: This panel contains a levee system that has not been accredited and is therefore not recognized as reducing the 1-percent-annual-chance flood hazard.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Harney County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Figure 3: Map Legend for FIRM, continued

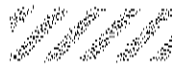
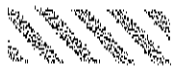
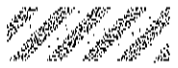
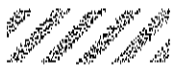
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Hazard due to Accredited or Provisionally Accredited Levee System: Area is shown as reduced flood hazard from the 1-percent-annual-chance or greater flood by a levee system. Overtopping or failure of any levee system is possible.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
NO SCREEN	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
(ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
Aqueduct *Channel* *Culvert* *Storm Sewer*	Channel, Culvert, Aqueduct, or Storm Sewer
Dam *Jetty* *Weir*	Dam, Jetty, Weir

Figure 3: Map Legend for FIRM, continued

	Levee, Dike, or Floodwall
Bridge	Bridge
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway

Figure 3: Map Legend for FIRM, continued

234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Harney County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1-percent-annual-chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent-annual-chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 22), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1-percent and 0.2-percent-annual-chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1-percent-annual-chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1-percent and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM", describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Harney County, respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 12. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1-percent-annual-chance floodplain corresponds to the SFHAs. The 0.2-percent-annual-chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Brown Canyon	Burns Paiute Reservation; Burns, City of; Harney County Unincorporated Areas	Confluence with Silvies River	Approximately 6,200 feet upstream of Foley Drive	17120002	1.8		N	AE	11/30/2021
Cricket Creek	Harney County, Unincorporated Areas	At the confluence with Emigrant Creek	61 feet southwest of centerline of Hines Logging Road	17120002	3.9		N	A	12/10/2012
Drainage B	Harney County, Unincorporated Areas; Hines, City of	Approximately 50 feet west of the intersection of South Hilltop Avenue and Howell Street	Approximately 1,465 feet upstream of outlet	17120002	0.3		N	A / X (Shaded)	12/10/2012
Drainage C	Harney County, Unincorporated Areas; Hines, City of	Highway 20	N Section Avenue	17120002	0.6		N	A / X (Shaded)	1982
Drainage D	Harney County, Unincorporated Areas; Hines, City of	Hiker/Biker Trail near Sewage Lagoon	Approximately 650 feet upstream of King Avenue	17120002	1.3		N	AE	11/30/2021
Drainage E	Burns, City of; Harney County, Unincorporated Areas; Hines, City of	Confluence with Drainage D	Confluences of Drainage E-1 and Drainage E-2	17120002	1.7		N	AE	11/30/2021
Drainage E-1	Burns Paiute Reservation; Burns, City of; Harney County Unincorporated Areas	Confluence with Drainage E	Approximately 3,400 feet upstream of W Monroe Street	17120002	0.9		N	AE	11/30/2021
Drainage E-2	Burns, City of	Confluence with Drainage E	Approximately 4,300 feet upstream of confluence with Drainage E	17120002	0.8		N	AE	11/30/2021

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Drainage H	Burns Paiute Reservation; Harney County, Unincorporated Areas	Confluence with Miller Canyon	Approximately 2,000 feet upstream of Pasigo Street	17120002	0.7		N	A	11/30/2021
East Fork Silvies River	Harney County, Unincorporated Areas	Confluence with Malheur Lake	Separation of Silvies River into two forks	17120001, 17120002	31.4		N	A	06/17/2016
East Harney County Basin	Burns Paiute Reservation; Harney County, Unincorporated Areas	Area east of City of Burns and north of Malheur Lake	Area east of City of Burns and north of Malheur Lake	17120001, 17120002		14.2	N	A	10/15/2020
Emigrant Creek	Harney County, Unincorporated Areas	At the confluence with the Silvies River	1,943 feet upstream of the confluence of Little Emigrant Creek	17120002	19.4		N	A	12/10/2012
Foley Slough	Harney County, Unincorporated Areas	At Fry Road	At West Loop Road	17120002	4.4		Y	AE	11/30/2021
Foley Slough	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.2		N	A	11/30/2021
Foley Slough Flow Split 1	Harney County, Unincorporated Areas	Convergence with Silvies River East Overbank Flow Split	Divergence from Foley Slough	17120002	2.8		Y	AE	11/30/2021
Foley Slough Flow Split 2	Harney County, Unincorporated Areas	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough	17120002	1.5		Y	AE	11/30/2021
Foley Slough Flow Split 3	Harney County, Unincorporated Areas	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough Flow Split 1	17120002	0.8		Y	AE	11/30/2021

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Foley Slough Flow Split 4	Harney County, Unincorporated Areas	Convergence with Foley Slough Flow Split 3	Divergence from Foley Slough Flow Split 2	17120002	0.5		Y	AE	11/30/2021
Foley Slough Flow To Silvies River	Harney County, Unincorporated Areas	Convergence with Silvies River	Divergence from Foley Slough	17120002	0.5		Y	AE	11/30/2021
Hay Creek	Harney County, Unincorporated Areas	At the confluence with Emigrant Creek	4,846 feet upstream of the confluence of West Fork Hay Creek	17120002	4.4		N	A	12/10/2012
Malheur River	Harney County, Unincorporated Areas	In the vicinity of Drewsey	In the vicinity of Drewsey	17050116	2.0		N	A	1982
Miller Canyon	Burns Paiute Reservation; Harney County, Unincorporated Areas	Confluence with Silvies River	Approximately 4,600 feet upstream of Radar Lane	17120002	1.2		N	A	11/30/2021
Poison Creek	Harney County, Unincorporated Areas	Confluence with Poison Creek Slough at Highway 20	Approximately 8,600 feet north of Highway 20	17120001	1.7		N	A	06/17/2016
Poison Creek	Harney County, Unincorporated Areas	Approximately 4,200 feet north of Highway 20	Approximately 200 feet east of Highway 395	17120001	2.0		N	A	06/17/2016
Poison Creek Slough	Harney County, Unincorporated Areas	Approximately 15,500 feet east of Highway 78 along Rye Grass Lane	Confluence of Poison Creek at Highway 20	17120001	14.2		N	A	06/17/2016

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Silvies River	Harney County, Unincorporated Areas	Separation of Silvies River into two forks	Approximately 2,700 feet downstream from Highway 78	17120002	1.1		N	A	06/17/2016
Silvies River	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas	Approximately 2,700 feet downstream from Highway 78	At West Loop Road	17120002	8.6		Y	AE	11/30/2021
Silvies River	Harney County, Unincorporated Areas	At West Loop Road	Approximately 19,300 feet upstream of West Loop Road	17120002	3.7		N	A	11/30/2021
Silvies River	Harney County, Unincorporated Areas;	Approximately 19,300 feet upstream of West Loop Road	4,903 feet upstream from the confluence with Charlie Creek	17120002	6.7		N	A	12/10/2012
Silvies River Reach 2	Harney County, Unincorporated Areas	4,903 feet upstream from the confluence with Charlie Creek	6,027 feet south of the intersection of Highway 395 and Silvies Hopper Lane	17120002	40.8		N	A	12/10/2012
Silvies River East Overbank Flow Split	Harney County, Unincorporated Areas	Approximately 2,900 feet downstream of Highway 78	Divergence from Silvies River	17120002	2.3		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 1	Harney County, Unincorporated Areas	Convergence with Foley Slough	At West Loop Road	17120002	0.7		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 1	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.3		N	A	11/30/2021

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Silvies River Flow Split To Foley Slough 2	Harney County, Unincorporated Areas	Convergence with Foley Slough	At West Loop Road	17120002	0.3		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 2	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.3		N	A	11/30/2021
Silvies River Flow Split To Foley Slough 3	Harney County, Unincorporated Areas	Convergence with Foley Slough	At West Loop Road	17120002	0.6		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 3	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.3		N	A	11/30/2021
Silvies River Flow Split To Foley Slough 4	Harney County, Unincorporated Areas	Convergence with Foley Slough	Divergence from Silvies River	17120002	0.4		Y	AE	11/30/2021
Trout Creek	Harney County, Unincorporated Areas	At the confluence with the Silvies River	2,820 feet upstream of King Mountain Lookout Road	17120002	10.4		N	A	12/10/2012
West Fork Silvies River	Harney County, Unincorporated Areas	Confluence with Malheur Lake	Separation of Silvies River into two forks	17120001, 17120002	33.4		N	A	06/17/2016

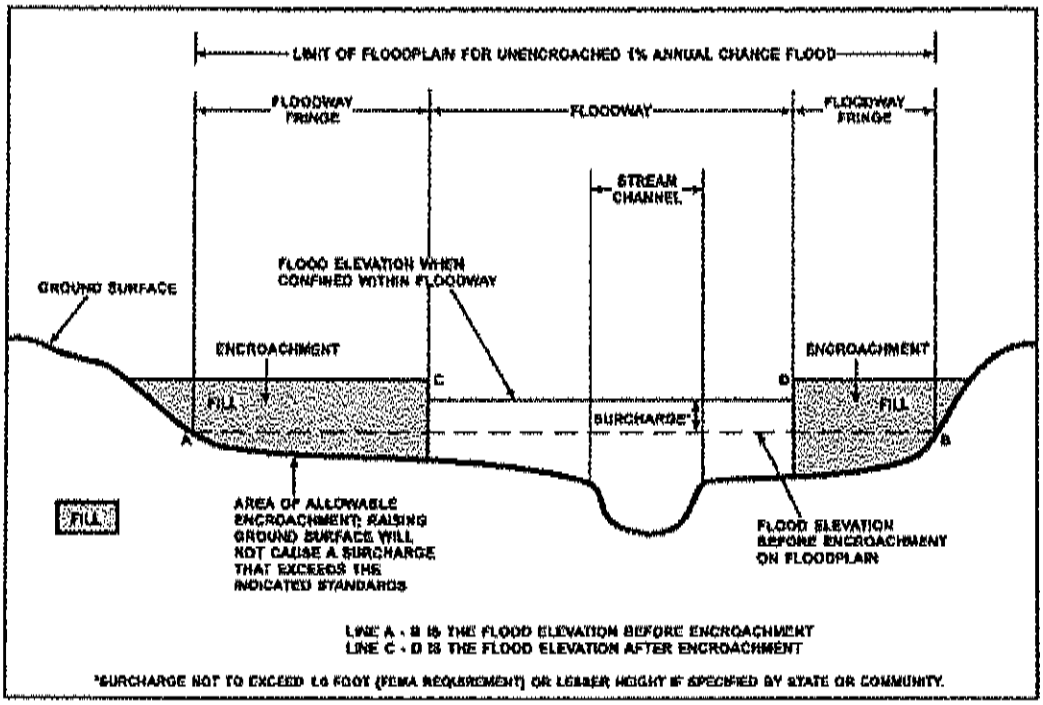
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1-percent-annual-chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1-percent-annual-chance flood. The floodway fringe is the area between the floodway and the 1-percent-annual-chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for Oregon require communities in Harney County to limit increases caused by encroachment to 1.0 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1-percent-annual-chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

BFEs are primarily intended for flood insurance rating purposes. Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. For example, the user may use the FIRM to determine the stream station of a location of interest and then use the profile to determine the 1-percent-annual-chance elevation at that location. Because only selected cross sections may be shown on the FIRM for riverine areas, the profile should be used to obtain the flood elevation between mapped cross sections. Additionally, for riverine areas, whole-foot elevations shown on the FIRM may not exactly reflect the elevations derived from the hydraulic analyses; therefore, elevations obtained from the profile may more accurately reflect the results of the hydraulic analysis.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic
[Not Applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic
[Not Applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Harney County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Burns Paiute Reservation	A, AE, X
Burns, City of	A, AE, X
Harney County, Unincorporated Areas	A, AE, X
Hines, City of	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 4 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Alvord Lake	17120009	Alvord Lake	Affecting the southeastern corner of Harney County	2,132
Beaver-South Fork	17070303	Beaver-South Fork	Affecting a very small northwest portion of Harney County	1,549
Crooked-Rattlesnake	17050109	Crooked-Rattlesnake	Affecting a very small eastern portion of Harney County	1,337

Table 4: Basin Characteristics (continued)

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Donner Und Blitzen	17120003	Donner Und Blitzen	Begins at mouth of Donner Und Blitzen River, extends southeast, affecting a center portion of Harney County	758
Guano	17120008	Guano	Affecting the southwestern corner of Harney County	3,007
Harney-Malheur Lakes	17120001	Harney-Malheur Lakes	A large watershed affecting the center portion of Harney County	1,434
Silver	17120004	Silver	Begins along Buzzard Creek, extends northwest, affecting the northwest corner of Harney County	1,682
Silvies	17120002	Silvies	Begins approximately 8,500 feet upstream from Malheur Lake, extends northwest, affecting one eighth of Harney County	1,320
Summer Lake	17120005	Summer Lake	Affecting a small western portion of Harney County	4,147
Thousand-Virgin	16040205	Thousand-Virgin	Affecting a southern portion of Harney County	1,168
Upper John Day	17070201	Upper John Day	Affecting a very small northwest portion of Harney County	2,136
Upper Malheur	17050116	Upper Malheur	Affecting the northeast corner of Harney County	2,453
Upper Quinn	16040201	Upper Quinn	Affecting a very small southeastern corner of Harney County	3,526
Warner Lakes	17120007	Warner Lakes	Affecting a small southwestern corner of Harney County	1,912

4.2 Principal Flood Problems

Table 5 contains a description of the principal flood problems that have been noted for Harney County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Brown Canyon/ Drainage F	There are eight distinct drainages in the foothills west and northwest of Burns, Burns Paiute Reservation, and Hines; Brown Canyon is among the most significant. Thunderstorm floods can cause major flood damage to the small, local drainage areas in the foothills. The eight drainages, separately or together, have the potential of flooding a common floodplain between the base of the hills and the Silvies River. Brown Canyon does not have a direct channel across the floodplain to the Silvies River; in addition, the gradients of its meandering ditches are very flat, thereby causing overflow along its route. There is little information concerning the flood history of this drainage.
Drainages B, C, and D	Flooding occurs regularly in the Burns-Hines area and cannot be viewed separately as isolated phenomenon in either of the jurisdictions. Runoff occurs from the relatively steep mountains immediately west of the City of Hines. Drainages B, C, and D present flooding problems to Hines. A flooding potential ponding area between the cities of Burns and Hines is an area called the Sump, which is a collection point for several of the side-hill drainages. Besides the runoff flooding that occurs rather regularly in spring, the worst type of flooding event is a major rainstorm combined with warm weather conditions on frozen ground. The channels that carry the floodwater from Drainages B, C, and D all have separate routes across the higher portion of the floodplain, and each is subject to overflow. There is little information concerning the flood history of these drainages.
Drainages D, E-1, and E-2	There are eight distinct drainages in the foothills west and northwest of Burns, Burns Paiute Reservation, and Hines; Drainages D, E-1, and E-2 are among the most significant. Thunderstorm floods can cause major flood damage to small, local drainage areas in the foothills. Besides the runoff flooding that occurs rather regularly in spring, the worse type of flooding event is a major rainstorm combined with warm weather conditions on frozen ground. The eight drainages, separately or together, have the potential of flooding a common floodplain between the base of the hills and the Silvies River. The channels that carry the floodwater from the drainages all have separate routes across the higher portion of the floodplain, and each is subject to overflow. There is little information concerning the flood history of these drainages.
Silvies River	Floods on the Silvies River and its tributaries are generally classified as winter floods; spring floods, which result from rapid snowmelt augmented by rainfall; and thunderstorm floods. Spring floods generate both widespread and prolonged flooding of the Silvies River, accounting for most of the annual flood damage. Flooding occurs on the Silvies River because of an inadequate natural channel capacity to contain spring floodflows. Historical and eyewitness accounts indicate that flooding from the Silvies River spreads out like a fan as it flows southerly and westerly into Malheur Lake. The flooding ranges upward from 20 to 30 miles through the swampy valley floor. During high-water periods, the area appears as a large lake. Floods of significant size have occurred in 1897, 1904, 1921, 1943, 1952, 1957, 1964, 1983, 1984, 1986, and 2011. The flood of 1897 is the largest known flood on the Silvies River. It occurred before any stream gages were installed. Although little historical data are available, the flood is estimated to have had a flow of approximately 9,000 cubic feet per second (cfs) and an occurrence probability of approximately once in 300 years.

Table 5: Principal Flood Problems (continued)

Flooding Source	Description of Flood Problems
East Harney County Basin	Historical and eyewitness accounts indicate that flooding from the Silvies River spread out like a fan as it flows southerly and westerly into Malheur Lake. The flooding ranges upward from 20 to 30 miles through the swampy valley floor. During high-water periods, the area appears as a large lake.

Table 6 contains information about historic flood elevations in the communities within Harney County.

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Malheur Lake	3,300 feet east from the intersection of State Highway 78 and S. Newton Road	4,105.5	1986	*	USFWS
Silvies River	18,994 feet upstream of Charlie Creek	4,214.1	1952	*	USGS gage

*Not provided

4.3 Dams and Other Flood Hazard Reduction Measures

Table 7 contains information about non-levee flood hazard reduction measures within Harney County such as dams or jetties. Levee systems are addressed in Section 4.4 of this FIS Report.

Table 7: Dams and Other Flood Hazard Reduction Measures

[Not Applicable to this Flood Risk Project]

4.4 Levee Systems

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the flood hazard from the 1-percent-annual-chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate flood hazard zone.

Levee systems that are determined to reduce the hazard from the 1-percent-annual-chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA

is awaiting data and/or documentation to demonstrate compliance with 44 CFR 65.10. These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee system's accreditation status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system no longer meets 44 CFR 65.10, FEMA will consider the levee system as non-accredited and issue an effective FIRM showing the levee-impacted area as a SFHA or Zone D.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levee systems that exist within Harney County, Table 8 "Levee Systems," lists all accredited levee systems, PALs, and non-accredited levee systems shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levee systems identified in the table are displayed on the FIRM with notes to users to indicate their flood hazard mapping status.

Please note that the information presented in Table 8 is subject to change at any time. For that reason, the latest information regarding the levee systems presented in the table may be obtained by accessing the National Levee Database. For additional information, contact the levee owner/sponsor or the local community shown in Table 30.

Table 8: Levee Systems

Community	Flooding Source(s)	NLD Levee System ID	NLD Levee System Name	Levee System Status on Effective FIRM	FIRM Panel(s)	Levee Owner(s) / Sponsor(s)
Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas	Silvies River	490005000004	Burns Levee System	Non-Accredited	41025C1406F, 41025C1408F	Harney County

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2-percent-annual-chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 12. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10. Stream gage information is provided in Table 11.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Brown Canyon	At outlet of Brown Canyon near Foley Drive	1.3	45	83	108	184	347
Cricket Creek	At the confluence with Emigrant Creek.	49	*	*	*	879	*
Drainage B	50 West of the intersection of S Hilltop Avenue And Howell Street.	1.0	*	*	*	46	*
Drainage D	At outlet of Drainage D Above City of Hines	2.2	114	177	263	383	469
Drainage E	Downstream of confluence with Drainage E-1 And Drainage E-2	1.9	68	123	157	275	450
Drainage E-1	Above confluence with Drainage E	1.3	49	84	102	212	310
Drainage E-2	Above confluence with Drainage E	0.6	22	36	49	79	138
East Fork Silvies River	Discharge of East Fork Silvies into Malheur Lake	91.7	*	*	*	1,333	*
East Fork Silvies River	Inflow to East Fork Silvies River	51.9	*	*	*	1,585	*
East Fork Silvies River	Upstream Most Point East Fork Silvies	29.4	*	*	*	1,163	*
Emigrant Creek	At the confluence with the Silvies River.	259	*	*	*	3,066	*
Hay Creek	At the confluence with Emigrant Creek.	33.4	*	*	*	660	*
Poison Creek	Confluence of Poison Creek into Poison Creek Slough	85.5	*	*	*	2,627	*

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Poison Creek	16 feet South of the Centerline of Highway 20.	79.9	*	*	*	1,269	*
Poison Creek Slough	Third outlet Poison Creek Slough	89.2	*	*	*	547	*
Poison Creek Slough	First outlet Poison Creek Slough	7.1	*	*	*	283	*
Poison Creek Slough	Second outlet Poison Creek Slough	1.4	*	*	*	60	*
Silvies River[1]	At USGS Gage 10393500	934	2,809	3,732	4,453	5,196	7,012
Silvies River Reach 2	4,903 feet Upstream From the confluence with Charlie Creek.	889	*	*	*	4,826	*
Trout Creek	At the confluence with the Silvies River.	58.6	*	*	*	1,006	*
West Fork Silvies River	Discharge of West Fork Silvies River into Malheur Lake	261.3	*	*	*	6,776	*
West Fork Silvies River	Downstream Location of West Fork Silvies River	254.6	*	*	*	6,814	*
West Fork Silvies River	Inflow From Northwest of West Fork Silvies River	234.1	*	*	*	6,832	*
West Fork Silvies River	Upstream Most Point West Fork Silvies River	83	*	*	*	7,133	*

[1]See Table 12 for information regarding discharges for Foley Slough, Foley Slough Flow Splits and Silvies River Flow Splits

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this Flood Risk Project]

Table 10: Summary of Non-Coastal Stillwater Elevations

[Not Applicable to this Flood Risk Project]

Table 11: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Silvies River Near Burns, OR	10393500	OWRD	OWDR/USGS gage on Silvies River near Burns, OR	934	4/11/2010	5/21/2015
Silvies River Near Burns, OR	10393500	USGS	OWDR/USGS gage on Silvies River near Burns, OR	934	6/1/1903	9/30/2012

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 23, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 12. Roughness coefficients are provided in Table 13. Roughness

coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Brown Canyon	Confluence with Silvies River	Approximately 6,200 feet upstream of Foley Drive	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Stream was modeled hydraulically using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded). A reach of this stream was named 'Drainage F' in previous FIS versions.
Cricket Creek	At the confluence with Emigrant Creek	61 feet southwest of centerline of Hines Logging Road	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Drainage B	Approximately 50 feet west of the intersection of South Hilltop Avenue and Howell Street	Approximately 1,465 feet upstream of outlet	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A / X (Shaded)	
Drainage C	Highway 20	N Section Avenue	Other	Other	1982	A / X (Shaded)	Zone A delineations within Harney County Unincorporated Areas were maintained from prior FIS versions.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Drainage D	Hiker/Biker Trail near Sewage Lagoon	Approximately 650 feet upstream of King Avenue	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Drainage E	Confluence with Drainage D	Confluences of Drainage E-1 and Drainage E-2	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Drainage E-1	Confluence with Drainage E	Approximately 3,400 feet upstream of W Monroe Street	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Drainage E-2	Confluence with Drainage E	Approximately 4,300 feet upstream of confluence with Drainage E	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Drainage H	Confluence with Miller Canyon	Approximately 2,000 feet upstream of Pasigo Street	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Brown Canyon and Drainage H were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
East Fork Silvies River	Confluence with Malheur Lake	Separation of Silvies River into two forks	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
East Harney County Basin	Area east of City of Burns and north of Malheur Lake	Area east of City of Burns and north of Malheur Lake	HEC-HMS version 4.3	HEC-RAS 5.0.7 (USACE 2019)	10/15/2020	A	Rain-on-grid methodologies were used to transform rainfall into overland flooding.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Emigrant Creek	At the confluence with the Silvies River	1,943 feet upstream of the confluence with Little Emigrant Creek	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Foley Slough	At Fry Road	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Foley Slough Flow Split 1	Convergence with Silvies River East Overbank Flow Split	Divergence from Foley Slough	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Foley Slough Flow Split 2	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough Flow Split 3	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough Flow Split 1	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough Flow Split 4	Convergence with Foley Slough Flow Split 3	Divergence from Foley Slough Flow Split 2	HEC-SSP version 2.1.1(USACE 2017)	HEC RAS version 5.0.7(USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough Flow To Silvies River	Convergence with Silvies River	Divergence from Foley Slough	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Hay Creek	At the confluence with Emigrant Creek	4,846 feet upstream of the confluence with West Fork Hay Creek	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Malheur River	In the vicinity of Drewsey	In the vicinity of Drewsey	Other	Other	1982	A	Approximate flood elevations along the Malheur River at Drewsey were developed using normal-depth calculations. The 100-year approximate flood plain boundary was developed from aerial photographs (USACE, 1979b).
Miller Canyon	Confluence with Silvies River	Approximately 4,600 feet upstream of Radar Lane	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Miller Canyon and Drainage H were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Poison Creek	Confluence with Poison Creek Slough at Highway 20	Approximately 8,600 feet north of Highway 20	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
Poison Creek	Approximately 4,200 feet north of Highway 20	Approximately 200 feet east of Highway 395	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Poison Creek Slough	Approximately 15,500 feet east of Highway 78 along Rye Grass Lane	Confluence of Poison Creek at Highway 20	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
Silvies River	Separation of Silvies River into two forks	Approximately 2,700 feet downstream from Highway 78	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
Silvies River	Approximately 2,700 feet downstream from Highway 78	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Silvies River	At West Loop Road	Approximately 19,300 feet upstream of West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Silvies River	Approximately 19,300 feet upstream of West Loop Road	4,903 feet upstream from the confluence with Charlie Creek	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Silvies River Reach 2	4,903 feet upstream from the confluence with Charlie Creek	6,027 feet south of the intersection of Highway 395 and Silvies Hopper Lane	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Silvies River East Overbank Flow Split	Approximately 2,900 feet downstream of Highway 78	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 1	Convergence with Foley Slough	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 1	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Silvies River Flow Split To Foley Slough 2	Convergence with Foley Slough	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 2	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Silvies River Flow Split To Foley Slough 3	Convergence with Foley Slough	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 3	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Silvies River Flow Split To Foley Slough 4	Convergence with Foley Slough	Divergence from Silvies River	HEC-SSP version 2.1.1(USACE 2017)	HEC RAS version 5.0.7(USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Trout Creek	At the confluence with the Silvies River	2,820 feet upstream of King Mountain Lookout Road	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
West Fork Silvies River	Confluence with Malheur Lake	Separation of Silvies River into two forks	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.

Table 13: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
Brown Canyon	0.040	0.030 - 0.120
Cricket Creek	0.040	0.040
Drainage B	0.040	0.040
Drainage D	0.040	0.030 - 0.120
Drainage E	0.040	0.030 - 0.120
Drainage E-1	0.040	0.030 - 0.120
Drainage E-2	0.040	0.030 - 0.120
Drainage H	0.040	0.030 - 0.120
East Fork Silvies River	N/A	0.030 - 0.100
Emigrant Creek	0.040	0.040
Foley Slough	0.040	0.030 - 0.120
Foley Slough Flow Split 1	N/A	0.030 - 0.120
Foley Slough Flow Split 2	N/A	0.030 - 0.120
Foley Slough Flow Split 3	N/A	0.030 - 0.120
Foley Slough Flow Split 4	N/A	0.030 - 0.120
Foley Slough Flow To Silvies River	N/A	0.030 - 0.120
Hay Creek	0.040	0.040
Miller Canyon	0.040	0.030 - 0.120
Poison Creek Segment 1	N/A	0.030 - 0.100
Poison Creek Segment 2	N/A	0.030 - 0.100
Poison Creek Slough	N/A	0.030 - 0.100
Silvies River	0.025 - 0.055	0.030 - 0.120
Silvies River East Overbank Flow Split	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 1	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 2	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 3	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 4	N/A	0.030 - 0.120
Trout Creek	0.040	0.040
West Fork Silvies River	N/A	0.030 - 0.100

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 14: Summary of Coastal Analyses
[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1-Percent-Annual-Chance Total Stillwater Elevations for Coastal Areas
[Not Applicable to this Flood Risk Project]

Table 15: Tide Gage Analysis Specifics
[Not Applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 16: Coastal Transect Parameters
[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map
[Not applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Summary of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

Table 18: Results of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov.

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please visit the NGS website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Harney County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

[Not applicable to this Flood Risk Project]

A countywide conversion factor could not be generated for Harney County because the maximum variance from average exceeds 0.25 feet. Calculations for the vertical offsets on a stream by stream basis are depicted in Table 20.

Table 20: Stream-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Brown Canyon	3.920
Drainage D	3.946
Drainage D Split to King Avenue	3.940
Drainage E-1	3.928
Drainage E-2	3.928
Drainage F	3.940
Silvies River	3.891

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/flood-maps/guidance-partners/guidelines-standards.

Base map information shown on the FIRM was derived from the sources described in Table 21.

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
2011 Silvies River High Water Marks	U.S. Army Corps of Engineers	2011		Spatial attributes and features contributing to High Water Marks. (USACE, 2011)
911 Emergency Transportation Layer (Geosolve)	Harney County, Oregon	2011	1:24,000	Spatial and attribute information for roads. (GEOSOLVE, 2011)
911 Emergency Transportation Layer (Harney County)	Harney County, Oregon	2013	1:24,000	Spatial and attribute information for roads (HARNEY COUNTY, 2013b)

Table 21: Base Map Sources (continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
911 Emergency Transportation Layer (Harney County)	Harney County, Oregon	2021	1:6,000	Spatial and attribute information for roads (HARNEY COUNTY, 2021b)
Aerial Photograph Burns Paiute Indian Reservation, Scale 1:4,800	U.S. Army Corps of Engineers	1975	1:4,800	Aerial photo used in delineating flood plain boundaries (USACE, 1975)
Aerial Photograph, Scale 1:2,400, Flown September 11, 1979	U.S. Army Corps of Engineers	1979	1:2,400	Aerial photo used in delineating flood plain boundaries (USACE, 1979a)
Aerial Photographs, City of Burns, Scale 1:6,000, Flown November 8, 1979	U.S. Army Corps of Engineers	1979	1:6,000	Aerial photo used in delineating flood plain boundaries (USACE, 1979b)
Aerial Photos, Scale 1:12,000	U.S. Army Corps of Engineers	1979	1:12,000	Aerial photo used in delineating flood plain boundaries (USACE, 1979c)
Airport Tarmacs Digitized On Lidar Collected in 2011	Oregon Department of Geology and Mineral Industries	2012	1:2,500	Spatial and attribute information for roads (DOGAMI, 2012)
Datum Conversions Derived from Lidar Collected in 2011	Oregon Department of Geology and Mineral Industries	2011		Spatial and attribute information for points used to determine datum conversion factors (DOGAMI, 2011)
DOGAMI DFIRM Task	Oregon Department of Geology and Mineral Industries	2016	1:24,000	Spatial and attribute information for FIRM panels (DOGAMI, 2016a)
Harney County Basemap Submittal	Federal Emergency Management Agency	2016		Basemap submittal for Harney County (DOGAMI, 2016b)
Harney County City and Reservation Limits	Harney County, Oregon	2021	1:6,000	Spatial and attribute information for municipal and reservation boundaries (HARNEY COUNTY, 2021c)

Table 21: Base Map Sources (continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
Harney County City Limits	Harney County, Oregon	2013	1:24,000	Spatial and attribute information for municipal boundaries (HARNEY COUNTY, 2013a)
Harney County Water Lines	Harney County, Oregon	2021	1:6,000	Spatial and attribute information for streams (HARNEY COUNTY, 2021b)
NHD Data	United States Geological Survey	2020	1:24,000	Spatial and attribute information for lakes, reservoirs, and creeks (USGS, 2020)
Oregon/Washington Surface Management Ownership	Bureau of Land Management	2011	1:24,000	Spatial and attribute information for county boundaries (BLM, 2011a)
Pacific Northwest Hydrography Framework	U.S. Geological Survey	2011	1:24,000	Spatial and attribute information for lakes, reservoirs, and creeks (USGS, 2011)
Public Land Survey System from BLM Geographic Coordinate Database	Bureau of Land Management	2011	1:24,000	Spatial and attribute information for PLSS data on FIRM panels (BLM, 2011b)
Streams Digitized from Lidar Collected in 2011 and 2015 and 2011 NAIP Imagery	Oregon Department of Geology and Mineral Industries	2015	1:2,500	Spatial and attribute information for lakes and ponds (DOGAMI, 2015b)
USDA-FPAC-BC Digital Ortho Mosaic for FIRM panels dated April 22, 2022	U.S. Department of Agriculture-Farm Service Agency	2016	1 Meter	NAIP basemap orthoimagery and spatial and attribute information for raster base map tile index (USDA, 2016)
USGS National Map: Orthoimagery for FIRM panels dated February 8, 2024	United States Geological Survey National Map	2020*	Not Provided	Orthorectified digital aerial photographs and satellite images of 1-meter (m) pixel resolution or finer (USGS National Map)

*Most recently refreshed data

Table 21: Base Map Sources (continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
Water Bodies Digitized from Lidar Collected in 2011 and 2015 and 2011 NAIP Imagery	Oregon Department of Geology and Mineral Industries	2015	1:2,500	Spatial and attribute information for lakes and ponds (DOGAMI, 2015a)

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources studied with 1D analysis, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described inTable 22. For riverine flooding sources studied with 2D analysis, the mapped floodplain boundaries shown on the FIRM have been delineated using the mesh developed during the hydraulic tasks.

In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Burns Paiute Reservation; Burns, City of; Harney County; Hines, City of	Cricket Creek, Brown Canyon, Drainage B (Zone A), Drainage D, Drainage E, Drainage E-1, Drainage E-2, Drainage H, East Fork Silvies River, Emigrant Creek, Foley Slough, Foley Slough Flow Split 1, Foley Slough Flow Split 2, Foley Slough Flow Split 3, Foley Slough Flow Split 4, Foley Slough Flow To Silvies River, Hay Creek, Miller Canyon, Poison Creek, Poison Creek Slough, Silvies River, Silvies River East Overbank Flow Split, Silvies River Flow Split To Foley Slough 1, Silvies River Flow Split To Foley Slough 2, Silvies River Flow Split To Foley Slough 3, Silvies River Flow Split To Foley Slough 4, Trout Creek, West Fork Silvies River	2015 LIDAR, 2011 LIDAR, and 10m DEM mosaic	0.06m RMSE	*	DOGAMI, 2015c
Harney County, Unincorporated Areas; Hines, City of	Drainage B (Zone X [Shaded]) and Drainage C	7.5-Minute Series Topographic Map, Scale 1:24,000, Contour Interval 20 feet	1.85 m RMSE	+/- 40 ft at 90% confidence	USGS, 1960b

*Not provided

BFEs shown at cross sections on the FIRM represent the 1-percent-annual-chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in areas of ponding and other areas with static base flood elevations.

Table 23: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	687	263	2,521	1.6	4,158.4	4,158.4	4,158.8	0.4
B	1,155	104	1,050	2.3	4,158.8	4,158.8	4,159.5	0.7
C	2,139	262	2,733	2.1	4,159.6	4,159.6	4,160.4	0.8
D	2,570	215	2,342	2.0	4,160.0	4,160.0	4,160.9	0.9
E	2,723	237	2,538	1.9	4,160.2	4,160.2	4,161.0	0.8
F	3,229	220	2,520	1.7	4,160.9	4,160.9	4,161.7	0.8
G	3,826	321	3,637	1.6	4,162.0	4,162.0	4,162.7	0.7
H	4,853	173	2,217	2.0	4,163.0	4,163.0	4,163.6	0.6
I	5,581	229	2,640	2.2	4,164.0	4,164.0	4,164.5	0.5
J	6,583	364	4,099	1.4	4,164.6	4,164.6	4,165.2	0.6
K	9,092	688	6,235	1.9	4,165.9	4,165.9	4,166.5	0.6
L	9,778	667	5,646	2.6	4,166.4	4,166.4	4,167.0	0.6
M	10,395	617	5,176	1.9	4,167.0	4,167.0	4,167.9	0.9
N	10,875	1,474	11,732	1.5	4,167.5	4,167.5	4,168.4	0.9
O	11,089	1,872	14,764	1.7	4,167.9	4,167.9	4,168.6	0.7
P	12,424	695	5,826	3.1	4,168.9	4,168.9	4,169.6	0.7
Q	13,255	511	5,839	1.7	4,172.0	4,172.0	4,172.9	0.9
R	14,199	978	11,041	1.1	4,172.2	4,172.2	4,173.1	0.9
S	14,857	1,155	12,542	1.3	4,172.4	4,172.4	4,173.2	0.8
T	15,494	1364	14,782	1	4,172.6	4,172.6	4,173.3	0.7
U	16,997	1294	13,141	1.1	4,172.8	4,172.8	4,173.4	0.6
V	17,552	1088	10,807	1.5	4,173.0	4,173.0	4,173.6	0.6
W	17,949	942	9,407	1.6	4,173.2	4,173.2	4,173.7	0.5
X	18,324	843	8,487	1.9	4,173.4	4,173.4	4,174.0	0.6

[1] Feet above Fry Road

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOLEY SLOUGH

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Y	18,649	856	8,699	1.9	4,173.6	4,173.6	4,174.2	0.6
Z	18,913	823	8,371	1.9	4,173.8	4,173.8	4,174.4	0.6
AA	19,070	775	7,981	2.0	4,174.0	4,174.0	4,174.6	0.6
AB	19,296	705	7,305	2.1	4,174.2	4,174.2	4,174.8	0.6
AC	19,678	656	6,787	1.7	4,174.4	4,174.4	4,175.1	0.7
AD	22,403	225	2,343	2.8	4,176.0	4,176.0	4,176.6	0.6
AE	22,839	231	2,618	2.5	4,176.9	4,176.9	4,177.7	0.8
AF	23,021	244	2,861	1.8	4,177.4	4,177.4	4,178.2	0.8
AG	23,106	142	1,680	0.7	4,177.5	4,177.5	4,178.2	0.7

[1] Feet above Fry Road

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOLEY SLOUGH

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	939	1,238	3,258	0.9	4,153.2	4,153.2	4,153.9	0.7
B	1,420	1,636	3,691	0.8	4,153.4	4,153.4	4,154.1	0.7
C	2,882	1,491	3,794	1.1	4,154.0	4,154.0	4,154.4	0.4
D	3,181	1,543	4,601	1.2	4,154.4	4,154.4	4,154.8	0.4
E	4,094	1,312	4,376	1.4	4,154.9	4,154.9	4,155.3	0.4
F	4,848	1,155	4,007	1.3	4,155.9	4,155.9	4,156.3	0.4
G	5,477	686	2,986	1.6	4,156.5	4,156.5	4,156.9	0.4
H	5,772	835	3,705	1.3	4,156.8	4,156.8	4,157.2	0.4
I	6,345	734	3,651	1.4	4,157.2	4,157.2	4,157.5	0.3
J	6,636	401	2,171	2.0	4,157.4	4,157.4	4,157.9	0.5
K	6,891	392	2,226	1.8	4,157.6	4,157.6	4,158.2	0.6
L	7,139	224	1,286	1.8	4,157.8	4,157.8	4,158.4	0.6
M	8,005	455	2,715	1.7	4,158.2	4,158.2	4,158.8	0.6
N	8,397	348	2,431	2.5	4,159.1	4,159.1	4,159.6	0.5
O	8,874	285	2,114	1.8	4,159.7	4,159.7	4,160.3	0.6
P	9,088	168	1,294	1.9	4,162.4	4,162.4	4,163.0	0.6
Q	9,354	157	1,221	1.2	4,162.4	4,162.4	4,163.1	0.7
R	10,791	161	1,188	2.0	4,162.6	4,162.6	4,163.4	0.8
S	11,183	87	599	2.7	4,162.9	4,162.9	4,163.7	0.8
T	11,857	163	1,194	2.4	4,164.0	4,164.0	4,164.8	0.8
U	12,461	133	991	2.2	4,164.6	4,164.6	4,165.3	0.7

[1] Feet above convergence with Silvies River East Overbank Flow Split

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOLEY SLOUGH FLOW SPLIT 1

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,376	246	462	1.1	4,154.0	4,154.0	4,154.5	0.5
B	1,942	233	343	1.5	4,154.4	4,154.4	4,155.1	0.7
C	2,257	222	297	1.8	4,155.0	4,155.0	4,155.6	0.6
D	2,862	203	472	1.7	4,155.8	4,155.8	4,156.4	0.6
E	3,867	316	812	0.9	4,156.0	4,156.0	4,156.7	0.7
F	4,380	268	525	1.0	4,156.2	4,156.2	4,156.9	0.7
G	4,994	152	254	2.2	4,156.9	4,156.9	4,157.6	0.7
H	5,841	288	662	0.8	4,158.0	4,158.0	4,158.6	0.6
I	6,838	195	586	1.1	4,158.4	4,158.4	4,159.1	0.7
J	7,244	123	368	2.5	4,158.6	4,158.6	4,159.4	0.8

[1] Feet above convergence with Foley Slough Flow Split 1

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY HARNEY COUNTY, OREGON AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: FOLEY SLOUGH FLOW SPLIT 2

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,195	655	1,721	1.1	4,157.1	4,157.1	4,157.3	0.2
B	1,948	409	1,549	1.3	4,157.6	4,157.6	4,157.8	0.2
C	2,466	48	208	1.8	4,158.0	4,158.0	4,158.5	0.5
D	3,356	73	388	2.1	4,159.0	4,159.0	4,159.7	0.7

[1] Feet above convergence with Foley Slough Flow Split 1

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY
HARNEY COUNTY, OREGON
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE:
FOLEY SLOUGH FLOW SPLIT 3

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	348	255	470	0.9	4,157.6	4,157.6	4,157.7	0.1
B	844	247	344	1.1	4,157.7	4,157.7	4,157.8	0.1
C	1,462	286	889	1.1	4,158.0	4,158.0	4,158.4	0.4
D	1,955	165	466	1.3	4,159.0	4,159.0	4,159.6	0.6

[1] Feet above convergence with Foley Slough Flow Split 3

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOLEY SLOUGH FLOW SPLIT 4

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,434	184	864	1.1	4,171.7	4,171.7	4,171.9	0.2
B	2,199	127	551	1.5	4,171.8	4,171.8	4,172.5	0.7

[1] Feet above convergence with Silvies River

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY HARNEY COUNTY, OREGON AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: FOLEY SLOUGH FLOW TO SILVIES RIVER

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,307	55	361	1.7	4,153.9	4,153.9	4,154.0	0.1
B	8,978	78	319	1.9	4,154.1	4,154.1	4,154.2	0.1
C	10,211	83	342	2.1	4,154.5	4,154.5	4,154.7	0.2
D	12,094	50	293	2.9	4,155.5	4,155.5	4,155.7	0.2
E	13,304	41	244	3.5	4,156.5	4,156.5	4,156.8	0.3
F	15,086	91	510	2.1	4,157.5	4,157.5	4,157.8	0.3
G	16,325	60	453	2.5	4,158.0	4,158.0	4,158.3	0.3
H	17,965	58	370	4.2	4,159.2	4,159.2	4,159.6	0.4
I	18,479	44	362	4.3	4,159.9	4,159.9	4,160.5	0.6
J	19,135	60	417	4.0	4,160.6	4,160.6	4,161.4	0.8
K	21,481	112	648	3.1	4,162.4	4,162.4	4,163.3	0.9
L	22,571	74	757	2.7	4,163.0	4,163.0	4,164.0	1.0
M	23,463	83	604	3.4	4,163.7	4,163.7	4,164.6	0.9
N	25,515	74	528	3.9	4,165.2	4,165.2	4,166.1	0.9
O	27,317	71	652	3.1	4,166.5	4,166.5	4,167.5	1.0
P	30,134	187	1,166	1.8	4,167.6	4,167.6	4,168.4	0.8
Q	32,519	150	891	2.3	4,168.3	4,168.3	4,169.0	0.7
R	36,392	72	765	1.9	4,171.8	4,171.8	4,172.1	0.3
S	38,024	67	786	1.8	4,172.0	4,172.0	4,172.4	0.4
T	39,668	77	738	1.9	4,172.3	4,172.3	4,172.6	0.3
U	41,285	63	644	2.2	4,172.6	4,172.6	4,173.0	0.4
V	43,929	79	684	2.2	4,173.4	4,173.4	4,173.7	0.3
W	45,942	60	578	2.6	4,174.0	4,174.0	4,174.3	0.3

[1] Feet above split of East Fork Silvies River / West Fork Silvies River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
X	47,714	57	569	2.6	4,174.6	4,174.6	4,175.0	0.4
Y	50,004	51	532	2.8	4,175.4	4,175.4	4,175.9	0.5
Z	51,316	69	552	3.1	4,176.2	4,176.2	4,176.6	0.4

[1] Feet above split of East Fork Silvies River / West Fork Silvies River

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY
HARNEY COUNTY, OREGON
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	572	1,098	6,580	1.7	4,150.9	4,150.9	4,151.8	0.9
B	1,980	2,505	12,472	1.0	4,152.0	4,152.0	4,152.7	0.7
C	2,658	2,239	8,046	1.2	4,152.2	4,152.2	4,152.9	0.7
D	3,108	2,472	10,654	0.6	4,152.9	4,152.9	4,153.7	0.8
E	4,093	2,996	10,042	0.6	4,153.0	4,153.0	4,153.8	0.8
F	5,423	2,918	7,738	0.7	4,153.2	4,153.2	4,153.9	0.7
G	5,754	3,130	7,267	0.8	4,153.4	4,153.4	4,153.9	0.5
H	6,444	2,565	3,270	1.2	4,154.0	4,154.0	4,154.3	0.3
I	7,326	1,031	1,743	1.7	4,154.5	4,154.5	4,155.0	0.5
J	7,725	992	2,629	1.3	4,155.6	4,155.6	4,156.3	0.7
K	8,769	2,353	4,618	0.7	4,155.7	4,155.7	4,156.4	0.7
L	8,902	2,728	5,363	1.0	4,156.0	4,156.0	4,156.4	0.4
M	9,757	2,724	5,316	1.1	4,157.0	4,157.0	4,157.3	0.3
N	10,641	1,772	3,030	0.9	4,158.0	4,158.0	4,158.2	0.2
O	11,288	557	781	1.2	4,159.0	4,159.0	4,159.3	0.3
P	11,474	528	3,402	0.5	4,159.3	4,159.3	4,160.1	0.8
Q	11,793	413	560	1.7	4,159.9	4,159.9	4,160.4	0.5

[1] Feet above a point approximately 2,900 feet downstream of Highway 78

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY
HARNEY COUNTY, OREGON
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE:
SILVIES RIVER EAST OVERBANK FLOW SPLIT

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	463	784	4,346	1.0	4,175.0	4,175.0	4,175.6	0.6
B	2,008	305	1,448	1.0	4,175.3	4,175.3	4,175.7	0.4
C	3,543	1,190	4,441	1.2	4,176.0	4,176.0	4,176.3	0.3

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE:

SILVIES RIVER FLOW SPLIT TO FOLEY SLOUGH 1

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,193	206	907	2.3	4,176.0	4,176.0	4,176.6	0.6
B	1,529	112	723	3.2	4,176.8	4,176.8	4,177.7	0.9
C	1,672	122	862	1.1	4,177.4	4,177.4	4,178.2	0.8

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER FLOW SPLIT TO FOLEY SLOUGH 2

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,068	146	594	2.6	4,174.9	4,174.9	4,175.5	0.6
B	2,783	176	905	1.7	4,176.0	4,176.0	4,176.9	0.9

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER FLOW SPLIT TO FOLEY SLOUGH 3

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,315	148	530	0.7	4,174.4	4,174.4	4,175.2	0.8
B	1,695	141	496	1.1	4,174.5	4,174.5	4,175.2	0.7
C	2,111	340	1,271	0.6	4,175.0	4,175.0	4,175.4	0.4

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER FLOW SPLIT TO FOLEY SLOUGH 4

Table 24: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 25: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 30, "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/flood-maps/tutorials.

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-262).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/flood-maps/change-your-flood-zone for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Mapping and Insurance eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at www.fema.gov/flood-maps/tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Harney County FIRM are listed in Table 26. Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

Table 26: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day

appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the Floods & Maps "Change Your Flood Zone Designation" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Harney County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 27, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 27 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Harney County FIRMs in countywide format was 04/20/2022.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Burns Paiute Reservation	07/18/1978	07/18/1978	N/A	09/28/1984	02/08/2024 04/20/2022
Burns, City of	11/30/1973	11/30/1973	01/30/1976	08/15/1984	02/08/2024 04/20/2022 12/22/1998 11/03/1989
Harney County, Unincorporated Areas	04/18/1978	04/18/1978	N/A	04/17/1984	02/08/2024 04/20/2022 12/22/1998
Hines, City of	11/30/1973	11/30/1973	05/21/1976	09/28/1984	02/08/2024 04/20/2022 11/03/1989

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 28 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Brown Canyon	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Brown Canyon	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas
Cricket Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Drainage B	04/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas; Hines, City of
Drainage C	12/22/1998	USACE, Walla Walla District	IAA-H-9-79	1982	Harney County, Unincorporated Areas; Hines, City of
Drainage D	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas; Hines, City of
Drainage E	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns, City of; Harney County, Unincorporated Areas; Hines, City of
Drainage E-1	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas
Drainage E-2	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns, City of
Drainage H	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Harney County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
East Fork Silvies River	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
East Harney County Basin	4/20/2022	STARR	HSFEHQ-09-D-0370	October 2020	Burns Paiute Reservation; Harney County, Unincorporated Areas
Emigrant Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Foley Slough	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 1	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 2	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 3	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 4	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow to Silvies River	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Hay Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Malheur River	12/22/1998	USACE, Walla Walla District	IAA-H-9-79	1982	Harney County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Miller Canyon	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Harney County, Unincorporated Areas
Poison Creek	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Poison Creek	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Poison Creek Slough	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Silvies River	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Silvies River	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas
Silvies River	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River	04/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Silvies River Reach 2	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Silvies River East Overbank Flow Split	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 1	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Silvies River Flow Split to Foley Slough 2	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 3	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 3	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 4	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Trout Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
West Fork Silvies River	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 29. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Burns Paiute Reservation	02/08/2024	09/16/2021	Flood Risk Review	Representatives of Burns Paiute Tribe, Oregon Department of Land Conservation & Development, FEMA, Harney County, OR, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers
Burns, City of	02/08/2024	09/15/2021	Flood Risk Review	Representatives of City of Burns, Oregon Department of Land Conservation & Development, FEMA, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers
Harney County, Unincorporated Areas	02/08/2024	09/16/2021	Flood Risk Review	Representatives of Burns Paiute Tribe, Oregon Department of Land Conservation & Development, FEMA, Harney County, OR, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers
Hines, City of	02/08/2024	09/15/2021	Flood Risk Review	Representatives of City of Hines, Oregon Department of Land Conservation & Development, FEMA, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Harney County, Unincorporated Areas (Harney Co. FIS, 1998), the FIS Report and FIRM previously prepared for the City of Burns (City of Burns FIS, 1998), the FIS Report and FIRM previously prepared for the Burns Paiute Reservation (Burns Paiute FIS, 1984), and the FIS Report and FIRM previously prepared for the City of Hines (City of Hines FIS, 1989).

Table 30 is a list of the locations where FIRMs for Harney County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 30: Map Repositories

Community	Address	City	State	Zip Code
Burns Paiute Reservation	Burns Paiute Tribal Office 100 Pasigo Street	Burns	OR	97720
Burns, City of	City Hall 242 South Broadway Avenue	Burns	OR	97720
Harney County, Unincorporated Areas	Harney County Planning Department 360 North Alvord Avenue	Burns	OR	97720
Hines, City of	City Hall 101 East Barnes Avenue	Hines	OR	97738

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 31.

Table 31 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region 10	Federal Regional Center 130 228th Street SW Bothell, WA 98021-9796 (425) 487-4657
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
Oregon NFIP Coordinator	Celinda Adair, CFM Oregon Dept. of Land Conservation and Development 635 Capitol Street NE, Suite 150 Salem, OR 97301-2540 Phone: (503) 934-0069 celinda.adair@state.or.us
Interim Oregon Risk MAP Coordinator	Matthew Crall Oregon Dept. of Land Conservation and Development 635 Capitol Street NE, Suite 150 Salem, OR 97301-2540 Phone: (503) 934-0046 matthew.crall@state.or.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 32 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 32: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
BLM, 2011a	Bureau of Land Management	Oregon/Washington Surface Management Ownership	Bureau of Land Management	Washington, D.C.	September, 2011	https://www.blm.gov/or/gis/data-details.php?data=ds000011
BLM, 2011b	Bureau of Land Management	Public Land Survey System from Blm Geographic Coordinate Database	Bureau of Land Management	Washington, D.C.	September, 2011	https://www.geocommunicator.gov/GeoComm/lsis_home/home/index.htm
BURNS PAIUTE, 1984a	Federal Emergency Management Agency	Burns Paiute indian Reservation, Oregon, Flood Insurance Rate Map 1984	Federal Emergency Management Agency	Oakton, Virginia	September, 1984	https://www.fema.gov/
BURNS PAIUTE, 1984b	Federal Emergency Management Agency	Burns Paiute Indian Reservation, Oregon, Flood Insurance Study 1984	Federal Emergency Management Agency	Oakton, Virginia	March, 1984	https://www.fema.gov/
CITY OF BURNS, 1998a	Federal Emergency Management Agency	City of Burns, Oregon, Flood Insurance Rate Map 1998	Federal Emergency Management Agency	Oakton, Virginia	December, 1998	https://www.fema.gov/
CITY OF BURNS, 1998b	Federal Emergency Management Agency	City of Burns, Oregon, Flood Insurance Study 1998	Federal Emergency Management Agency	Oakton, Virginia	December, 1998	https://www.fema.gov/
CITY OF HINES, 1989	Federal Emergency Management Agency	City of Hines, Oregon, Flood Insurance Study 1989	Federal Emergency Management Agency	Oakton, Virginia	November, 1989	https://www.fema.gov/

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title*, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
DOGAMI, 2011	Oregon Department of Geology and Mineral industries	Datum Conversions Derived from Lidar Collected in 2011	Oregon Lidar Consortium; Watershed Sciences Inc.	Portland, Oregon	August, 2011	
DOGAMI, 2012	Oregon Department of Geology and Mineral industries	Airport Tarmacs Digitized On Lidar Collected in 2011	Oregon Department of Geology and Mineral Industries	Portland, Oregon	2012	https://www.oregongeology.org/
DOGAMI, 2013	Oregon Department of Geology and Mineral industries	DOGAMI Hydrologic Study for A Zones	Oregon Department of Geology and Mineral Industries	Portland, Oregon	December, 2012	https://www.oregongeology.org/
DOGAMI, 2015a	Oregon Department of Geology and Mineral industries	Water Bodies Digitized from Lidar Collected in 2011 and 2015 and 2011 NIAP Imagery	Oregon Department of Geology and Mineral Industries	Portland, Oregon	May, 2015	https://www.oregongeology.org/
DOGAMI, 2015b	Oregon Department of Geology and Mineral industries	Streams Digitized from Lidar Collected in 2011 and 2015 and 2011 NIAP Imagery	Oregon Department of Geology and Mineral Industries	Portland, Oregon	May, 2015	https://www.oregongeology.org/
DOGAMI, 2015c	Oregon Department of Geology and Mineral industries	Terrain Submission for Harney County	Oregon Lidar Consortium; Watershed Sciences Inc.	Portland, Oregon	May, 2015	https://www.oregongeology.org/sub/projects/olc/default.htm

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title*, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
DOGAMI, 2016a	Oregon Department of Geology and Mineral Industries	DOGAMI DFIRM Task	Oregon Department of Geology and Mineral Industries	Portland, Oregon	April, 2016	https://www.oregongeology.org/
DOGAMI, 2016b	Federal Emergency Management Agency	Harney County Basemap Submittal	Oregon Department of Geology and Mineral Industries	Oakton, Virginia	April, 2016	https://www.fema.gov/
G&W, 1973	G&W Engineering	Topographic Maps, City of Burns, Scale 1:1,200, Contour interval 2 Feet	G&W Engineering	Ontario, Oregon	October, 1973	
GEOSOLVE, 2011	Harney County, Oregon	911 Emergency Transportation Layer (Geosolve)	GEOSOLVE, Inc.	Burns, Oregon	December, 2011	https://www.geosolveinc.com/projects.html
HARNEY COUNTY, 1984	Federal Emergency Management Agency	Harney County, Oregon, Flood Insurance Rate Map 1984	Federal Emergency Management Agency	Oakton, Virginia	April, 1984	https://www.fema.gov/
HARNEY COUNTY, 1998	Federal Emergency Management Agency	Harney County, Oregon, Flood Insurance Study 1998	Federal Emergency Management Agency	Oakton, Virginia	December, 1998	https://www.fema.gov/
HARNEY COUNTY, 2013a	Harney County, Oregon	Harney County City Limits	Harney County Planning Department	Burns, Oregon	August, 2013	https://www.co.harney.or.us/
HARNEY COUNTY, 2013b	Harney County, Oregon	911 Emergency Transportation Layer (Harney County)	Harney County Planning Department	Burns, Oregon	August, 2013	https://www.co.harney.or.us/

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title*, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
HARNEY COUNTY, 2021a	Harney County, Oregon	Harney County City and Reservation Limits	Harney County GIS	Burns, Oregon	April, 2021	https://www.co.harney.or.us/
HARNEY COUNTY, 2021b	Harney County, Oregon	Harney County Water Lines	Harney County GIS	Burns, Oregon	April, 2021	https://www.co.harney.or.us/
HARNEY COUNTY, 2021c	Harney County, Oregon	911 Emergency Transportation Layer (Harney County)	Harney County GIS	Burns, Oregon	April, 2021	https://www.co.harney.or.us/
HUD, 1978	U.S. Department of Housing and Urban Development-Federal Insurance Administration	Flood Hazard Boundary Map, Harney County, Oregon	U.S. Department of Housing and Urban Development-Federal Insurance Administration		April, 1978	
NOAA, 2001	NOAA / National Weather Service	NOAA Atlas 2 - Precipitation-Frequency Atlas for The Western United States All-Season Series	NOAA/National Weather Service/office of Hydrologic Development/Hydrometeorological Design Studies Center (HDSC)	Silver Spring, Maryland	December, 2001	
STARR II, 2015	Strategic Alliance for Risk Reduction II	Incorporation of Floodplain Mapping information To The Harney Countywide Study	Strategic Alliance For Risk Reduction II	Laurel, Maryland	August, 2018	

Table 32: Bibliography and References (continued)

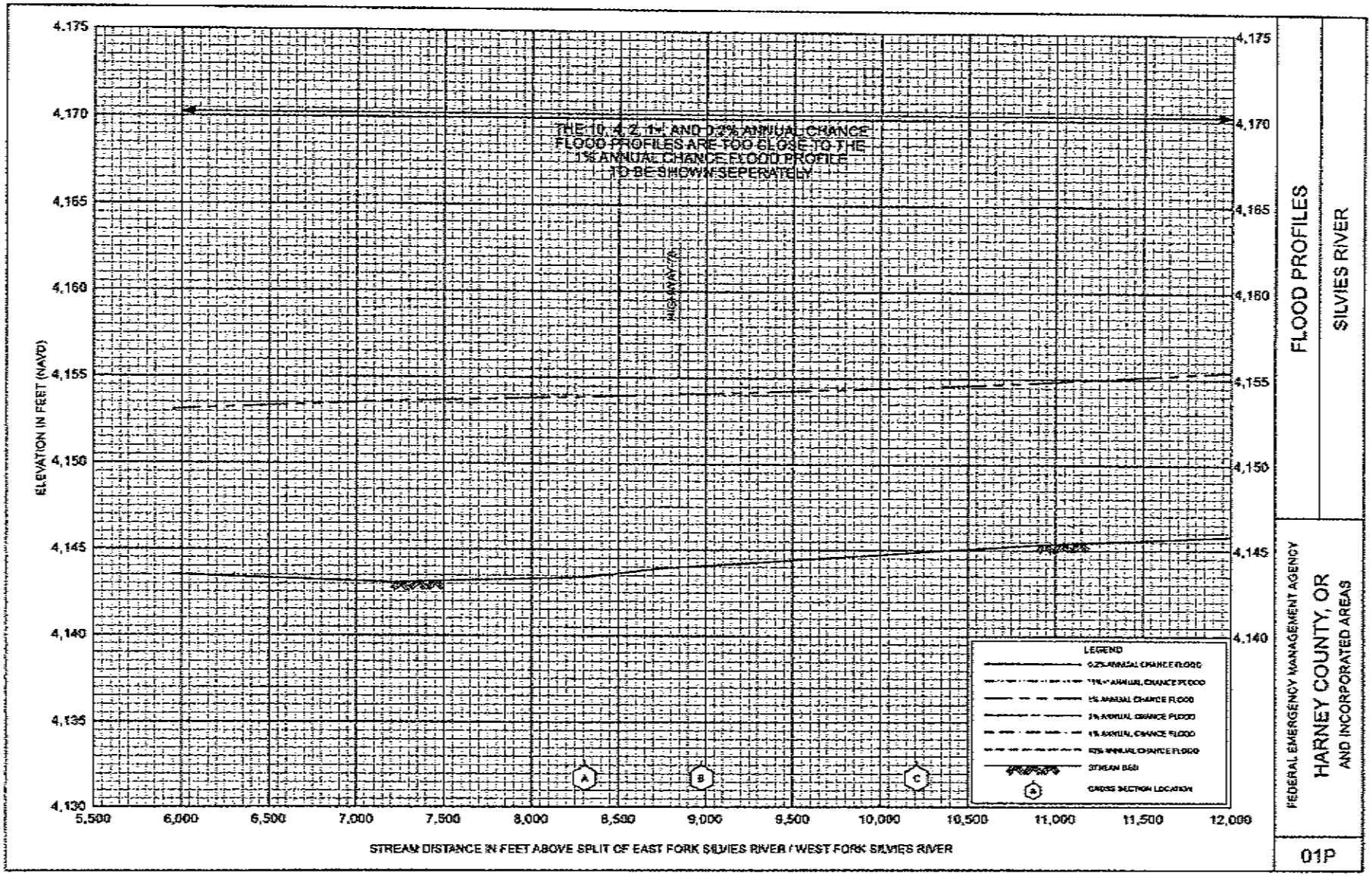
Citation in this FIS	Publisher/ Issuer	*Publication Title*, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
STARR II, 2016	Strategic Alliance for Risk Reduction II	STARR II Hydrologic Study for A Zones	Strategic Alliance For Risk Reduction II	Laurel, Maryland	June, 2016	
STARR II, 2020	Strategic Alliance for Risk Reduction II	East Harney Valley Approximate Analyses	Strategic Alliance For Risk Reduction II	Laurel, Maryland	October, 2020	
STARR II, 2022a	Strategic Alliance for Risk Reduction II	DFIRM Database Submission for Harney County	Strategic Alliance For Risk Reduction II	Raleigh, North Carolina	April, 2022	
STARR II, 2022b	Federal Emergency Management Agency	Harney County Phase II Riverine Study	Strategic Alliance For Risk Reduction II	Washington D.C.	May 2022	https://hazards.fema.gov
USACE, 1975	U.S. Army Corps of Engineers	Aerial Photograph Burns Paiute Indian Reservation, Scale 1:4,800	U.S. Army Corps of Engineers		March, 1975	
USACE, 1979a	U.S. Army Corps of Engineers	Aerial Photograph, Scale 1:2,400, Flown September 11, 1979	U.S. Army Corps of Engineers		September, 1979	
USACE, 1979b	U.S. Army Corps of Engineers	Aerial Photographs, City of Burns, Scale 1:6,000, Flown November 8, 1979	U.S. Army Corps of Engineers		November, 1979	
USACE, 1979c	U.S. Army Corps of Engineers	Aerial Photos, Scale 1:12,000	U.S. Army Corps of Engineers		1979	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 2011	U.S. Army Corps of Engineers	2011 Silvies River High Water Marks	U.S. Army Corps of Engineers	Portland, Oregon	April, 2011	
USACE, 2019a	U.S. Army Corps of Engineers	HEC-RAS Version 5.0.7	The Hydrologic Engineering Center	Davis, California	2019	https://www.hec.usace.army.mil/software/hec-ras/documentation.aspx
USACE, 2019b	U.S. Army Corps of Engineers	HEC-RAS Version 5.0.7	Brunner, G. W.	Davis, California	2019	
USACE, 2020	U.S. Army Corps of Engineers	HEC-HMS Version 4.6.1	U.S. Army Corps of Engineers	Davis, California	September, 2020	
USDA, 1986	U.S. Department of Agriculture-Farm Service Agency	Urban Hydrology for Small Watersheds, Technical Release 55 (Tr-55), (Second Ed.).	U.S. Department of Agriculture	Washington D.C.	1986	
USDA, 2016	U.S. Department of Agriculture-Farm Service Agency	USDA-FSA-APFO Digital Ortho Mosaic	USDA-FSA Aerial Photography Field office	Salt Lake City, Utah	September, 2016	
USDA, 2019	U.S. Department of Agriculture-Farm Service Agency	Gridded Soil Survey Geographic (GSSURGO) by State	USDA/NRCS Soil Survey Center	Lincoln, Nebraska	2019	https://sdmdataaccess.sc.egov.usda.gov
USDA, 2020	U.S. Department of Agriculture-Farm Service Agency	NAIP basemap orthoimagery used to inform flood hazard delineations	USDA-Farm Production and Conservation Business Center	Salt Lake City, Utah	September, 2020	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title*, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS National Map	United States Geological Survey National Map	USGS National Map: Orthoimagery for FIRM Panels Dated 02/08/2024	U.S. Geological Survey	Reston, Virginia	02/08/2024	https://www.usgs.gov/
USGS, 1960a	United States Geological Survey	15-Minute Series Topographic Maps, Scale 1:62,500, Contour intervals 10, 20, and 40 Feet: Dog Mountain, Oregon (1959); Lowen, Oregon (1959); Crane, Oregon (1960); Burns, Oregon (1960)	U.S. Geological Survey		1960	
USGS, 1960b	United States Geological Survey	7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour interval 20 Feet	U.S. Geological Survey		1960	
USGS, 2011	United States Geological Survey	Pacific Northwest Hydrography Framework	Pacific Northwest Hydrography Framework	Denver, Colorado	July, 2011	https://nhd.usgs.gov/
USGS, 2019	United States Geological Survey	NLCD 2016 Land Cover Conterminous United States	U.S. Geological Survey		2019	
USGS, 2020	United States Geological Survey	NHD Data	U.S. Geological Survey	Washington, D.C.	June, 2020	https://apps.nationalmap.gov/downloader/#/



FLOOD PROFILES

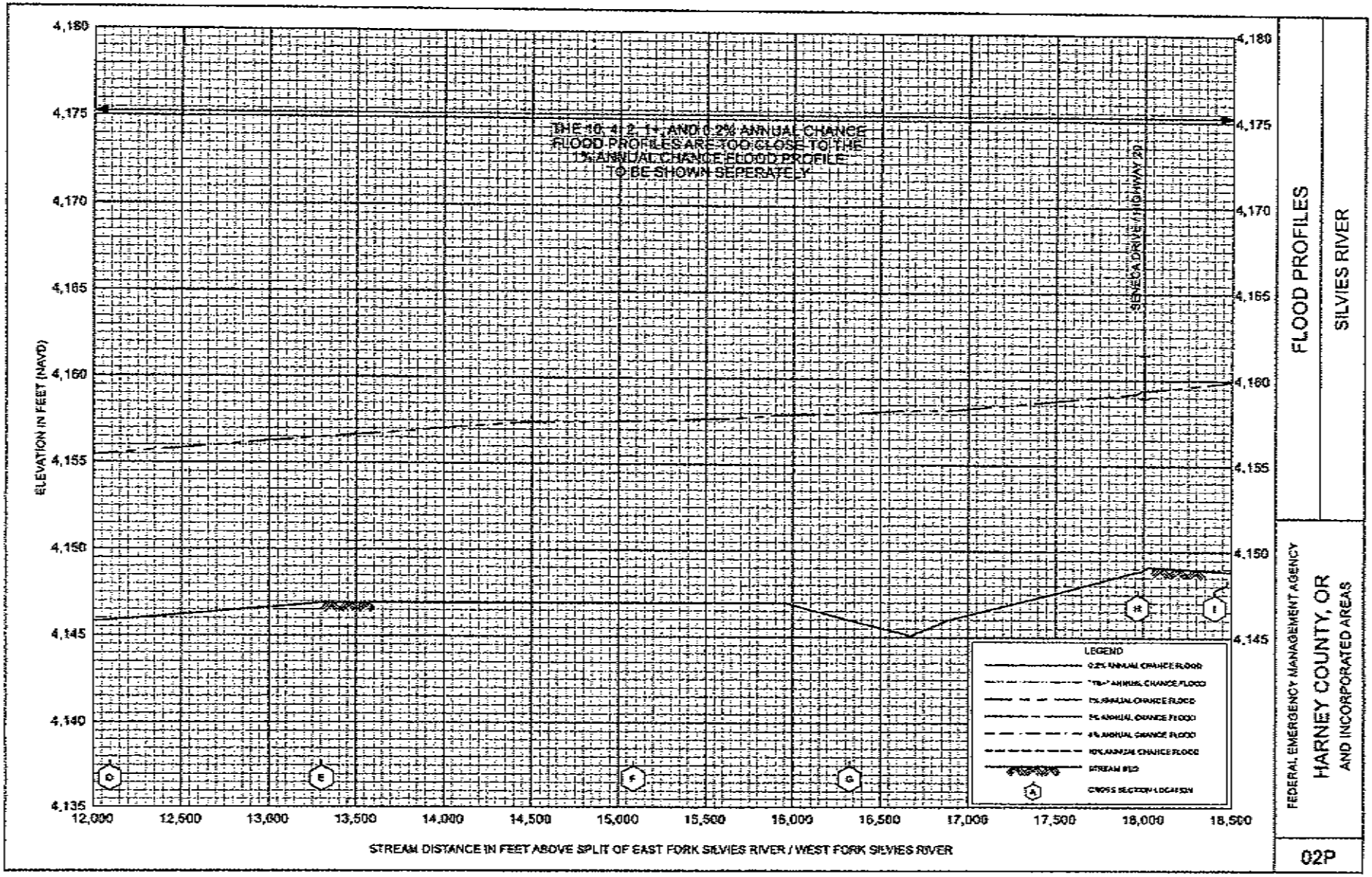
SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

01P



FLOOD PROFILES

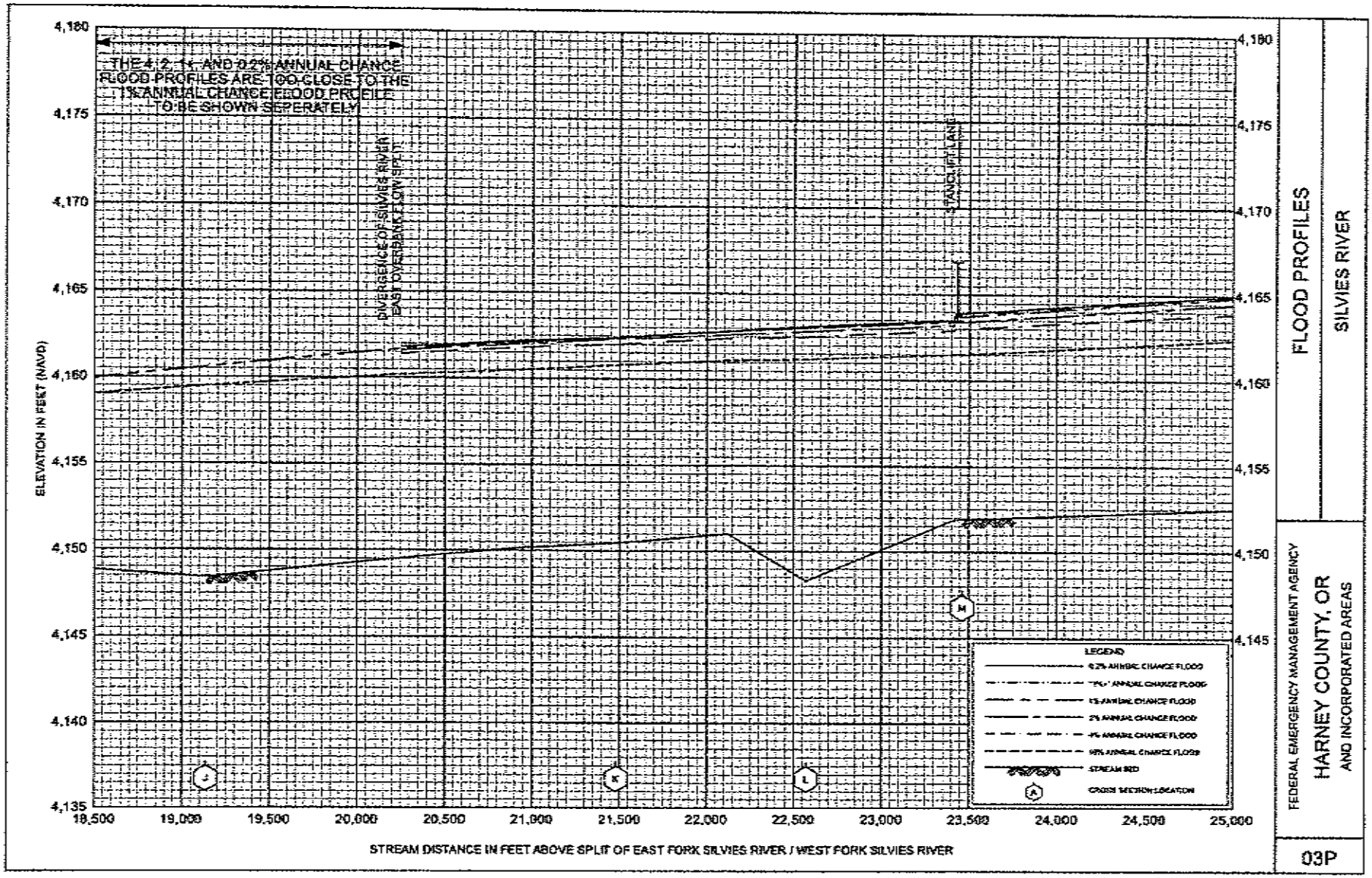
SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

02P



FLOOD PROFILES

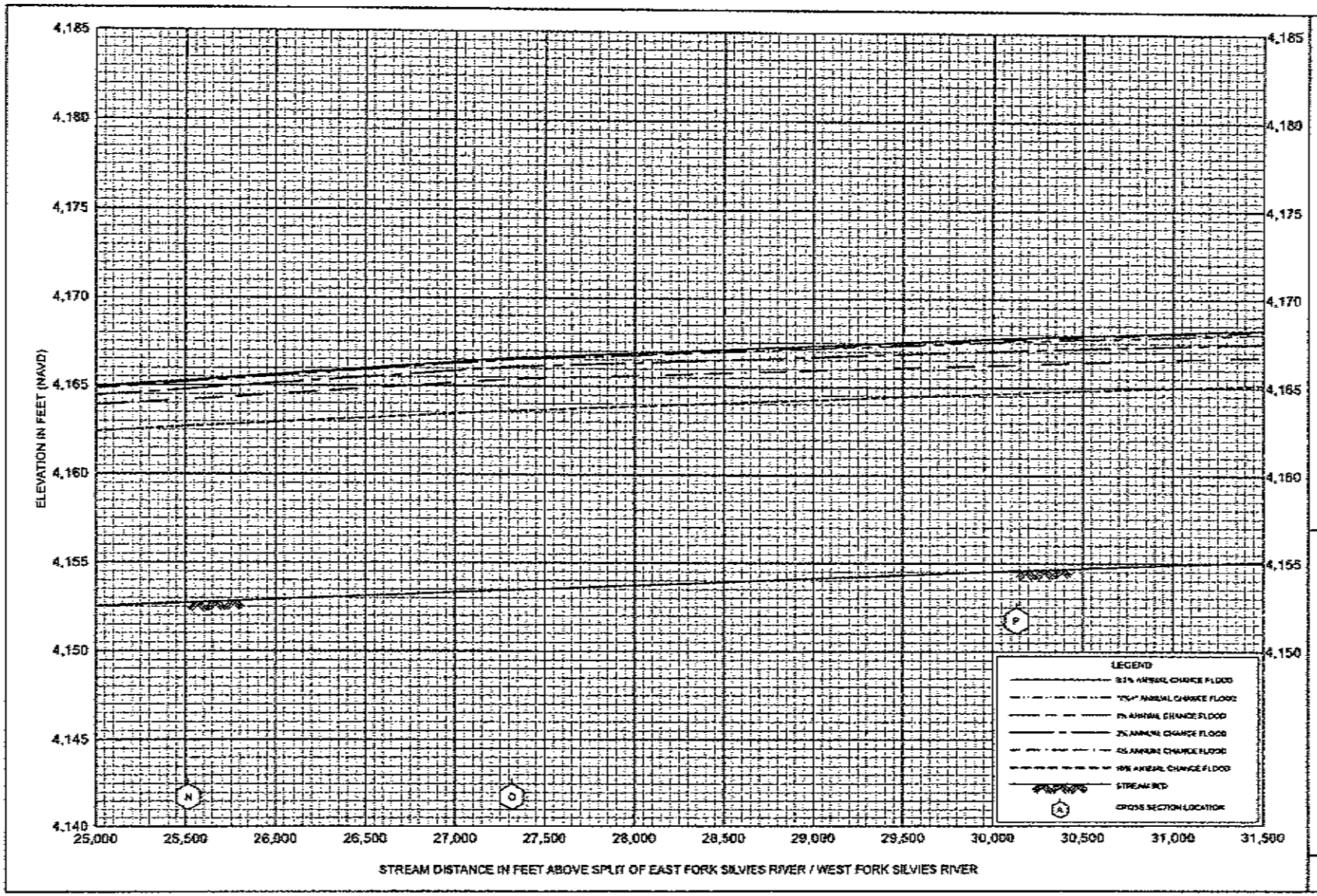
SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

03P



FLOOD PROFILES

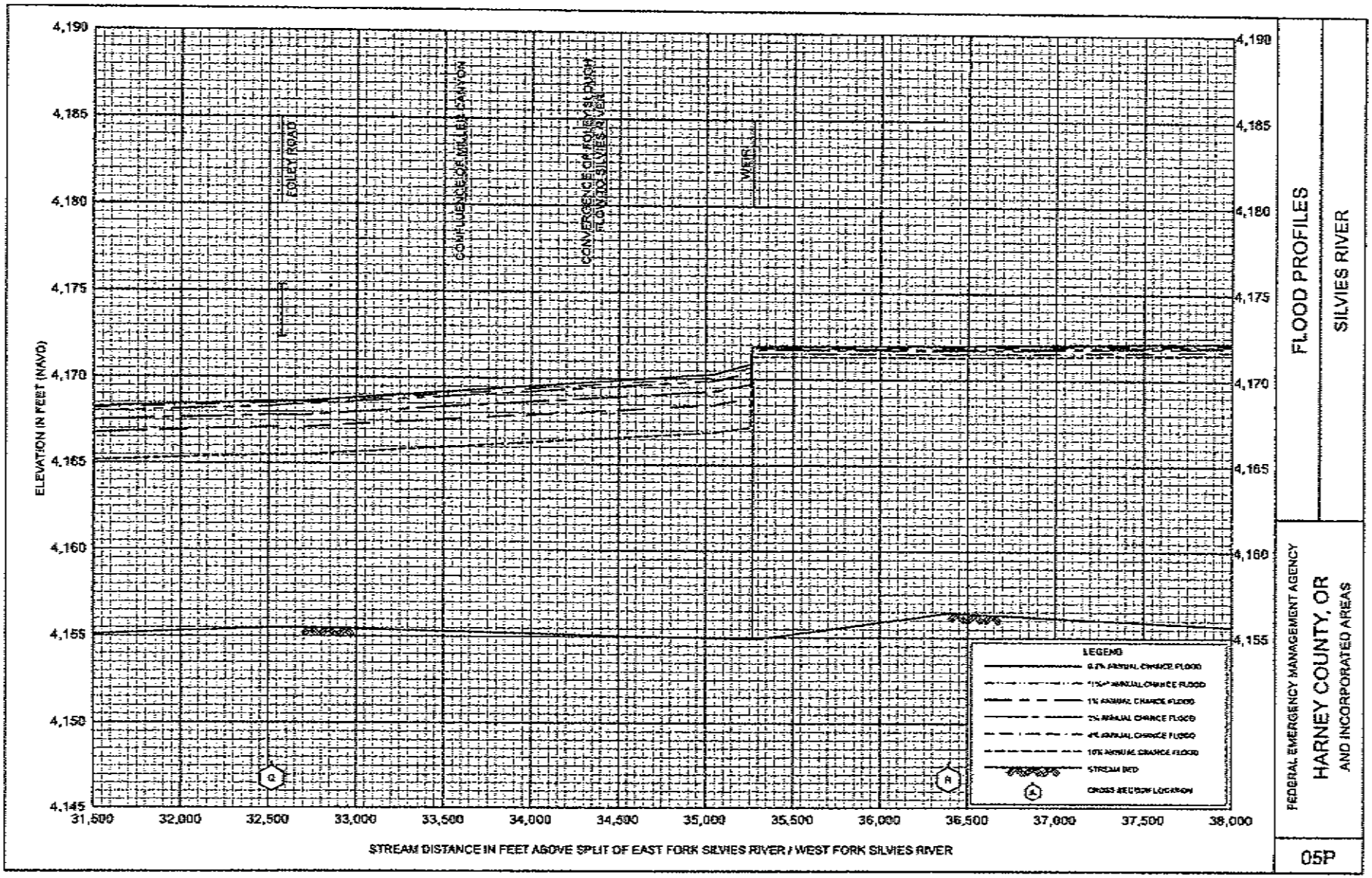
SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

04P



FLOOD PROFILES

SILVIES RIVER

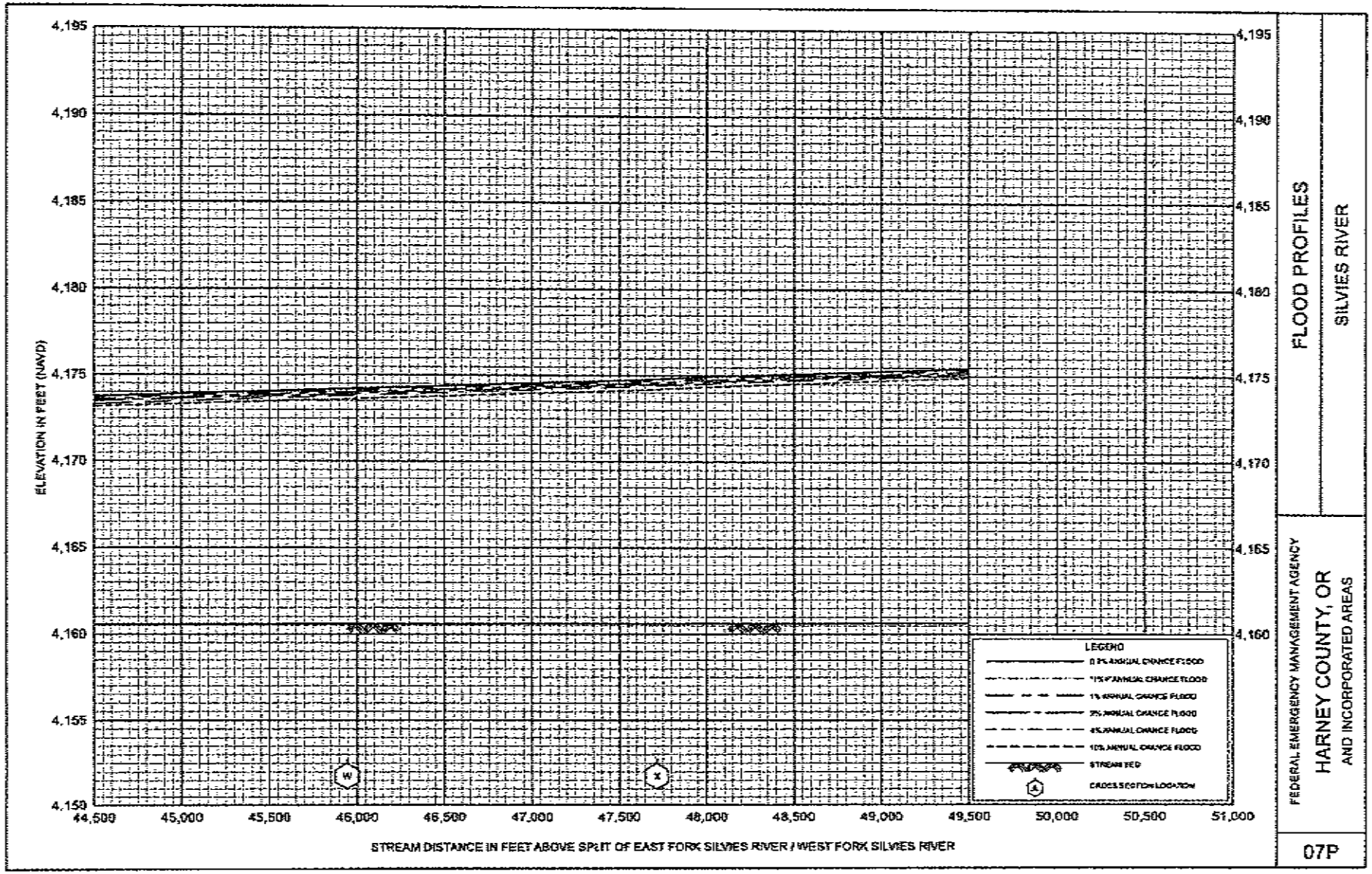
FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

05P

FEDERAL EMERGENCY MANAGEMENT AGENCY
HARNEY COUNTY, OR
AND INCORPORATED AREAS
FLOOD PROFILES
SILVIES RIVER
06P
ELEVATION IN FEET (NAVD)
STREAM DISTANCE IN FEET ABOVE SPLIT OF EAST FORK SILVIES RIVER / WEST FORK SILVIES RIVER
LEGEND
STREAM BED
CROSS SECTION LOCATION
4,190
4,185
4,180
4,175
4,170
4,165
4,160
4,155
4,150
4,145
38,000
38,500
39,000
39,500
40,000
40,500
41,000
41,500
42,000
42,500
43,000
43,500
44,000
44,500



FLOOD PROFILES

SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

07P

FEDERAL EMERGENCY MANAGEMENT AGENCY

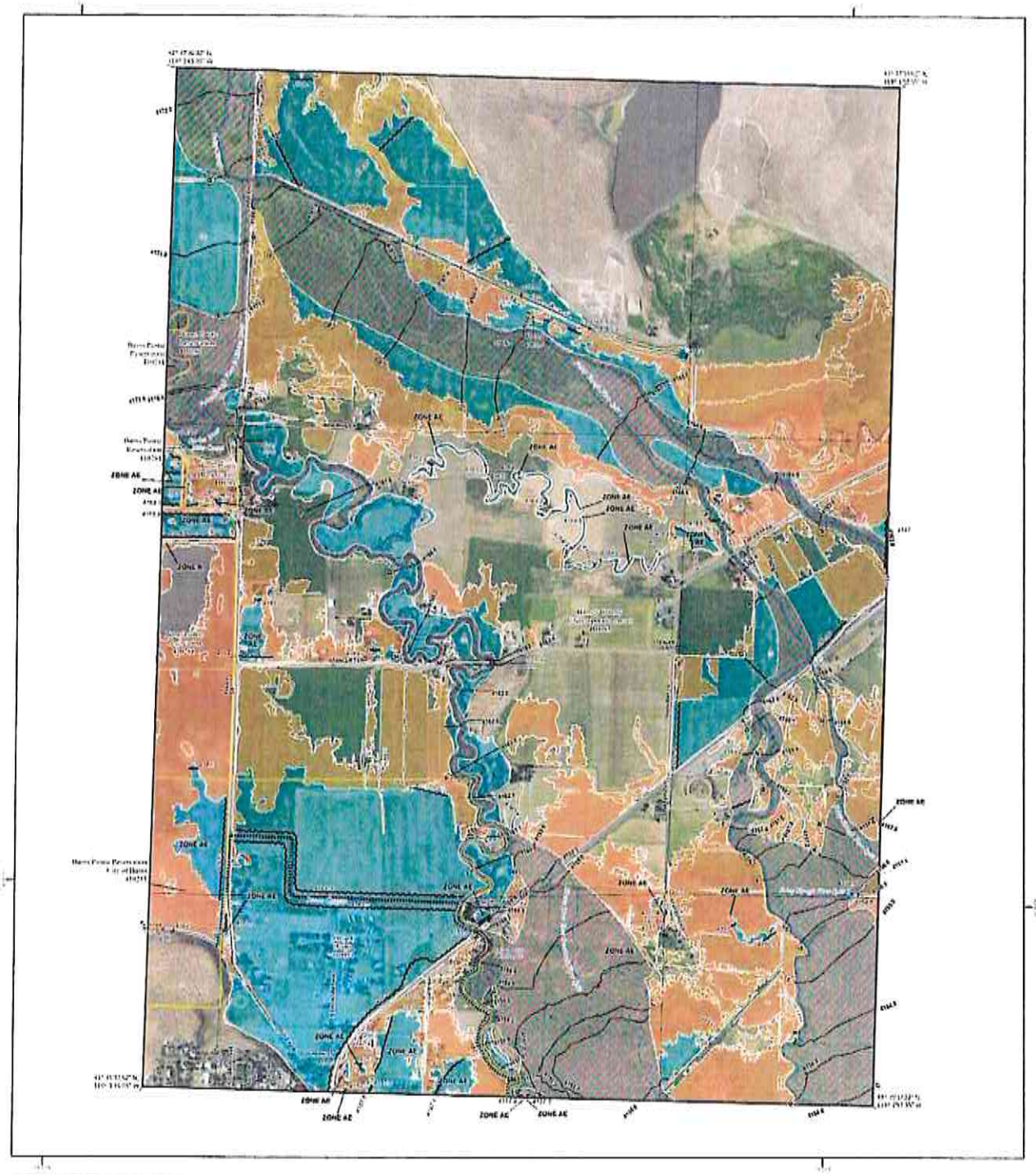
HARNEY COUNTY, OR

AND INCORPORATED AREAS

FLOOD PROFILES

SILVIES RIVER

08P



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE)
- With BFE or Depth
- 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
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Flood Risk due to Levee

OTHER AREAS OF FLOOD HAZARD
- Area with Flood Risk due to Levee
- NO SCREEN: Area of Minimal Flood Hazard

OTHER AREAS
- Area of Undetermined Flood Hazard

GENERAL STRUCTURES
- Channel, Culvert or Storm Sewer
- Levee, Dike or Floodwall

OTHER FEATURES
- Cross Sections with 1% Annual Chance
- Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

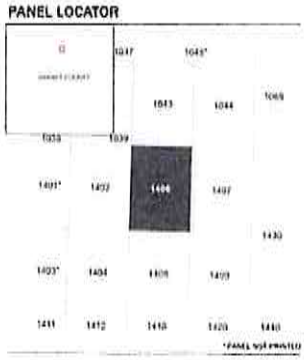
SCALE

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 600 Meters

PANEL LOCATOR



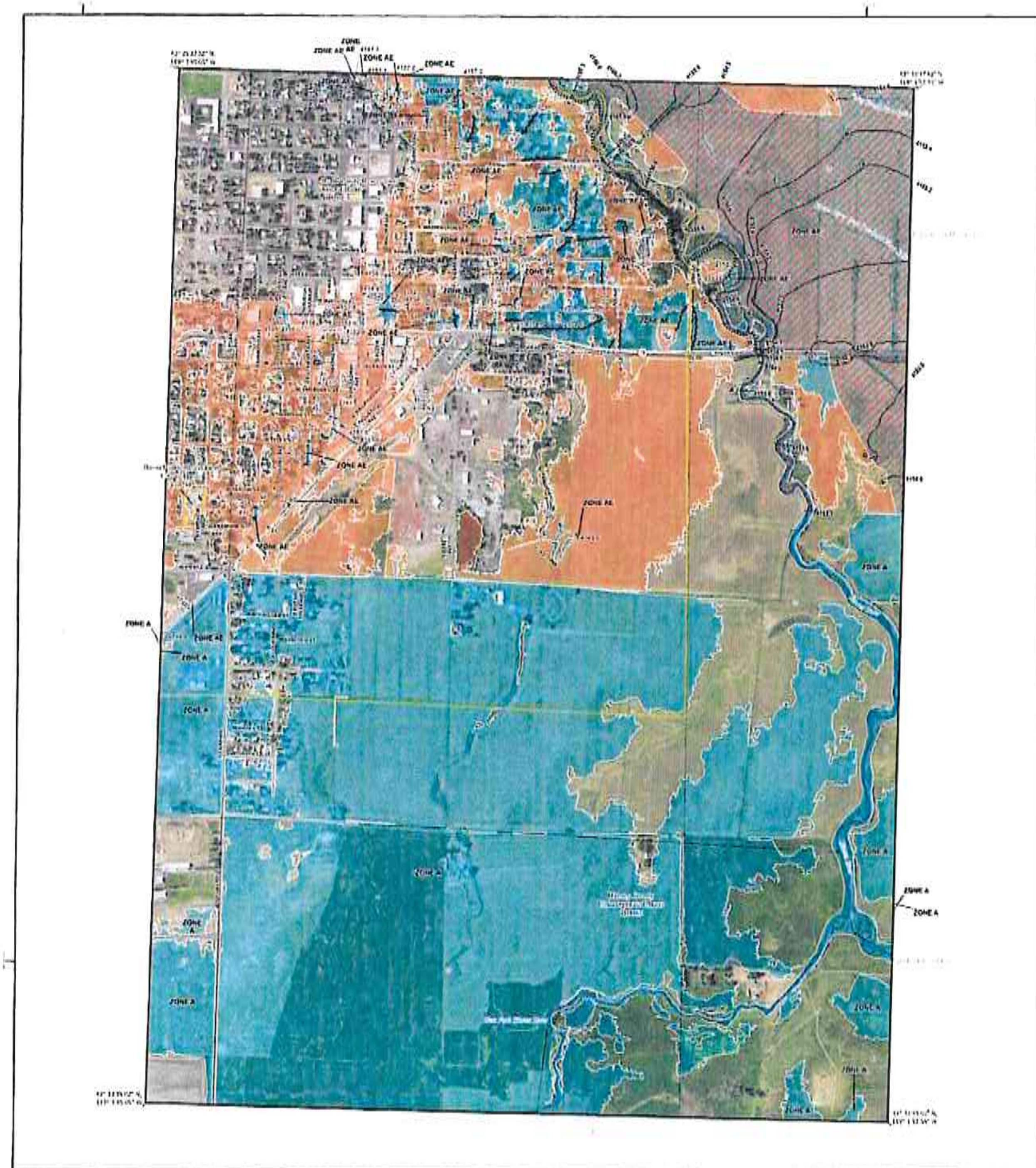
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

HARNEY COUNTY
OREGON
AND INCORPORATED
AREAS

COMMUNITY	NUMBER	PANEL	SUFFIX

MAP NUMBER
41025C1406F
EFFECTIVE DATE
February 05, 2024



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE)
- With BFE or Depth
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- Future Conditions 1% Annual Chance Flood Hazard

OTHER AREAS

GENERAL STRUCTURES

OTHER FEATURES

NOTES TO USERS

SCALE

1 inch = 500 feet 1:6,000

PANEL LOCATOR

11	1039	1043	1044	1095
		1400	1407	
1401*	1402			1450
1403*	1404	1408	1409	
1411	1412	1416	1420	1440
	1415			

*PANEL NOT PRINTED

FEMA

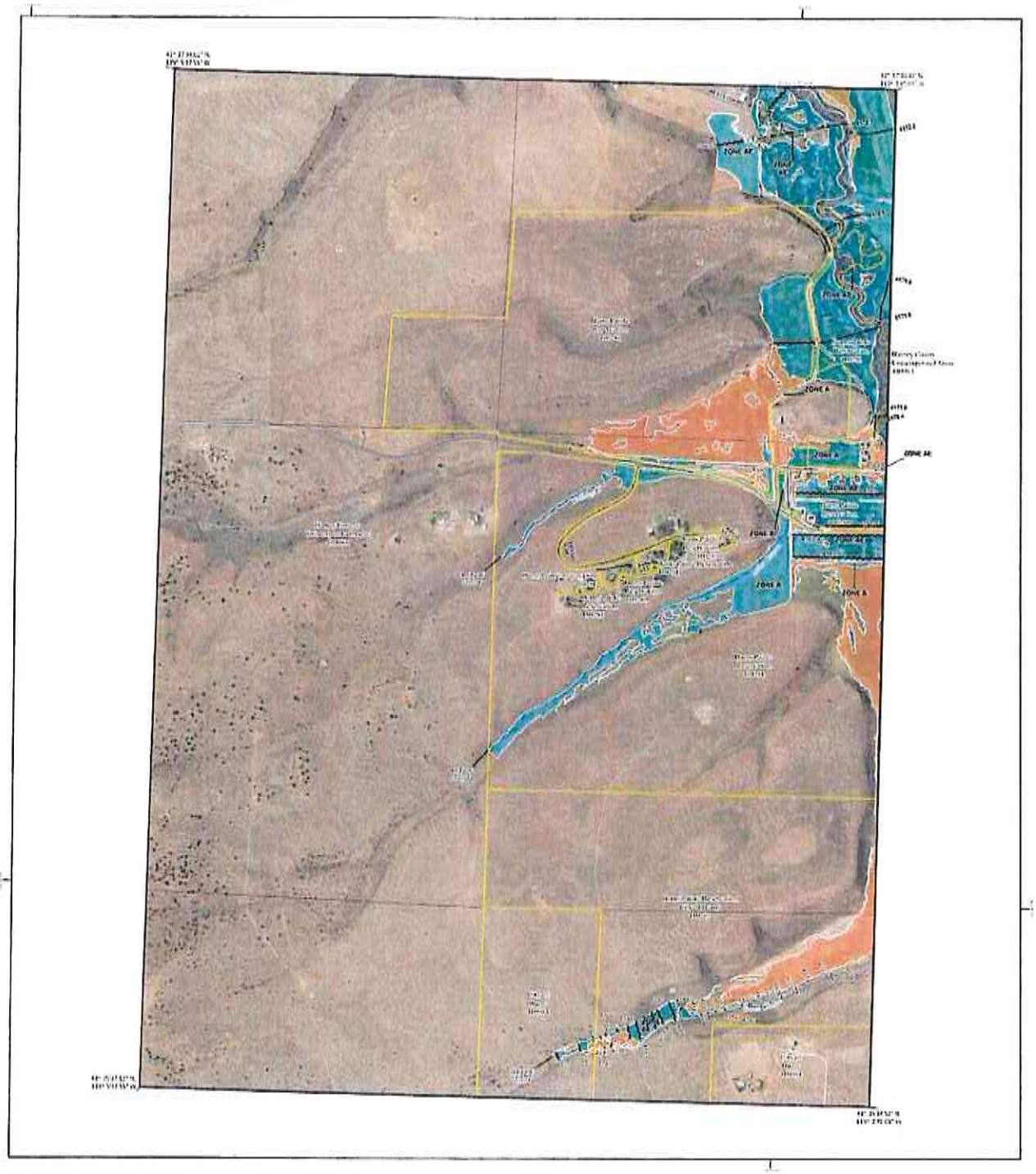
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

HARNEY COUNTY
OREGON
AND INCORPORATED AREAS

COMMUNITY NUMBER PANEL SUFFIX

MAP NUMBER
41025C1408F
EFFECTIVE DATE
February 08, 2024



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS

Without Base Flood Elevation (BFE)

With BFE or Depth

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

Future Conditions 1% Annual Chance Flood Hazard

Area with Reduced Flood Risk due to Levee See Notes

Area with Flood Risk due to Levee

OTHER AREAS OF FLOOD HAZARD

NO SCREEN

Area of Minimal Flood Hazard

Area of Undetermined Flood Hazard

OTHER AREAS

GENERAL STRUCTURES

Channel, Culvert, or Storm Sewer

Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance

Water Surface Elevation

Coastal Transect

Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

Base Flood Elevations (BFE)

Limit of State

Jurisdiction Boundary

OTHER FEATURES

NOTES TO USERS

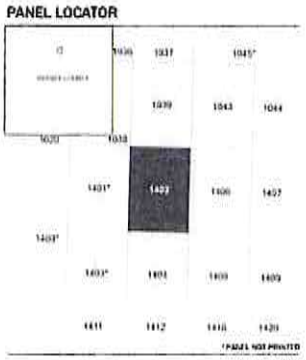
SCALE

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 feet

0 50 100 200 300 400 meters

PANEL LOCATOR



PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

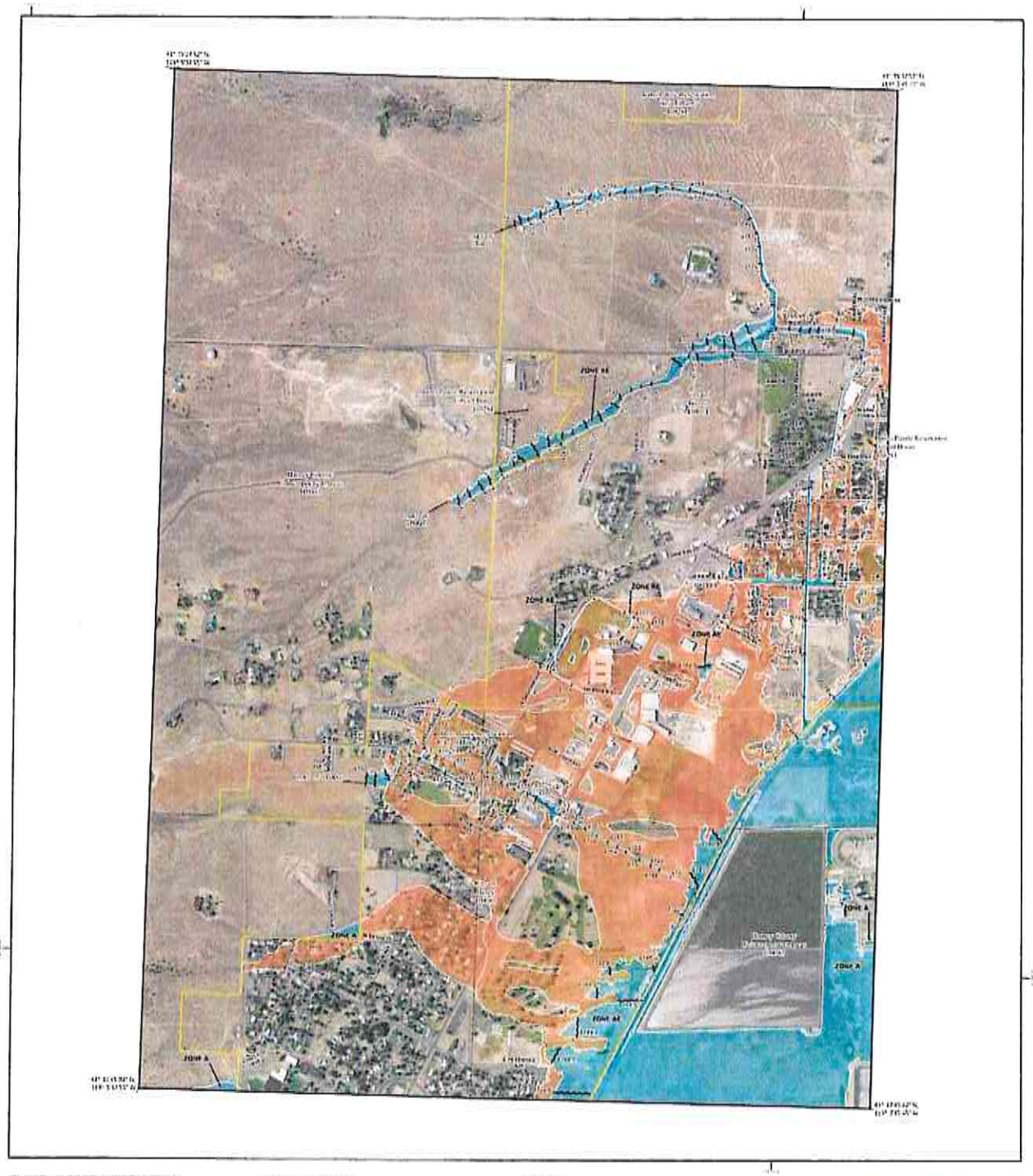
HARNEY COUNTY
OREGON
AND INCORPORATED
AREAS

COMMUNITY	NUMBER	PANEL	SUFFIX

41035C1403F

EFFECTIVE DATE

February 08, 2024



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE)
- With BFE or Depth
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 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
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Flood Risk due to Levee
- Area with Flood Risk due to Levee

OTHER AREAS
- NO SCREEN
- Area of Minimal Flood Hazard
- Area of Undetermined Flood Hazard

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall
- Cross Section with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

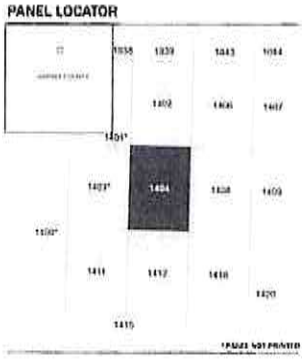
SCALE

1 inch = 600 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 400 Meters

PANEL LOCATOR



PANELS NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

HARNEY COUNTY
OREGON
AND INCORPORATED
AREAS

COMMUNITY	NUMBER	PANEL	SUFFIX
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]
41025C1404F
[illegible]
February 06, 2024

EXHIBIT B

City of Burns Zoning Ordinance

18.30.300 Overlay Zones.

*****

18.30.325 Flood Hazard Area

1. **Purpose.** It is the purpose of this section to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

   A. To protect human life and health;

   B. To minimize expenditure of public money and costly flood control projects;

   C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

   D. To minimize prolonged business interruptions;

   E. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in areas of special flood hazard;

   F. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;

   G. To ensure that potential buyers are notified that property is in an area of special flood hazard;

   H. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

2. **Definitions Specific to the City of Burns Flood Hazard Regulations.** Unless specifically defined below, words or phrases used in this section shall be interpreted so as to give them the meaning they have in common usage. The defined terms below are specific to administration of the City of Burns flood hazard regulations. The definitions in this section do not apply generally to the balance of the City of Burns Zoning Ordinance.

   "Area of shallow flooding" means a designated Zone AO, AH, AR/AO or AR/AH on a community's flood insurance rate map (FIRM) with a one percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

"Area of special flood hazard" means the land in the floodplain area within a community subject to a one percent or greater chance of flooding in any given year. It is shown on the flood insurance rate map (FIRM) as Zone A, AO, AH, A1-30, AE, A99, AR. "Special flood hazard area" is synonymous in meaning and definition with the phrase "area of special flood hazard."

"Base flood" means the flood having a one percent chance of being equaled or exceeded in any given year.

"Base flood elevation (BFE)" means the elevation to which floodwater is anticipated to rise during the base flood.

"Basement" means any area of the building having its floor subgrade (below ground level) on all sides.

"Critical facility" means a facility for which even a slight chance of flooding might be too great. Critical facilities include, but are not limited to, schools, nursing homes, hospitals, police, fire and emergency response installations, installations which produce, use, or store hazardous materials or hazardous waste.

"Development" means a building or mining operation, making a material change in the use or appearance of a structure or land, dividing land into two or more parcels, including partitions and subdivisions as provided in ORS 92.010 to 92.285, and creating or terminating a right of access. "Development" also means any manmade change to improved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation, or drilling operations.

"Elevated building" means, for insurance purposes, a non-basement building which has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns.

"Flood" or "flooding" means:

A. A general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters.

(2) The unusual and rapid accumulation or runoff of surface waters from any source.

(3) Mudslides (i.e., mudflows) which are proximately caused by flooding as defined in subsection (A)(2) of this definition and are akin to a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

B. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in subsection (A)(1) of this definition.

Flood Elevation Study. See "flood insurance study (FIS)."

"Flood insurance rate map (FIRM)" means the official map of a community, on which the Federal Insurance Administrator has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a digital flood insurance rate map (DFIRM).

"Flood insurance study (FIS)" means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudslide (i.e., mudflow) and/or flood-related erosion hazards.

"Floodplain variance" means a grant of relief by the City of Burns from the terms of a floodplain area management regulation.

"Floodplain violation" means the failure of a structure or other development to be fully compliant with the community's floodplain area management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this section is presumed to be in violation until such time as that documentation is provided.

"Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.

"Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Also referred to as "regulatory floodway."

"Functionally dependent use" means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, and does not include long-term storage or related manufacturing facilities.

"Highest adjacent grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

"Historic structure" means any structure that is:

A. Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

B. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

C. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or

D. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

(1) By an approved state program as determined by the Secretary of the Interior; or

(2) Directly by the Secretary of the Interior in states without approved programs.

E. A structure designated as a historic structure in the City of Burns Comprehensive Plan, pursuant to Statewide Planning Goal 5.

"Lowest floor" means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this section.

"Manufactured dwelling" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured dwelling" does not include a "recreational vehicle" and is synonymous with "manufactured home."

"Mean sea level" means, for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's flood insurance rate map are referenced.

Special Flood Hazard Area. See "area of special flood hazard" for this definition.

"Start of construction" includes substantial improvement as defined herein below, and means, for floodplain management purposes, the date the building permit was issued, provided that the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days from the date of the permit. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured dwelling on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and

filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

"Substantial damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

"Substantial improvement" means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or

2. Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure."

3. **General Provisions.**

   A. **Lands to Which the City of Burns Floodplain Area Ordinance Applies.** This section shall apply to all special flood hazard areas within the jurisdiction of the City of Burns.

   B. **Basis for Establishing the Special Flood Hazard Areas.** The special flood hazard areas identified by the Federal Insurance Administrator in a scientific and engineering report entitled "The Flood Insurance Study (FIS) for Harney County, Oregon and Incorporated Areas," ~~dated April 20, 2022~~dated February 8, 2024, with accompanying Flood Insurance Rate Maps (FIRMs) ~~41025CIND1A,~~ 41025CIND2~~A~~B, 41025C1402~~E~~F, 41025C1404~~E~~F, 41025C1406~~E~~F, and 41025C1408~~E~~F, are hereby adopted by reference and declared to be a part of this section. The FIS and FIRM panels are on file at the Planning and Zoning Department located in City Hall.

4. **Coordination with State of Oregon Specialty Codes.** Pursuant to the requirement established in ORS 455 that the City of Burns administers and enforces the State of Oregon Specialty Codes, the City of Burns does hereby acknowledge that the Oregon Specialty Codes contain certain provisions that apply to the design and construction of buildings and structures located in special flood hazard areas. Therefore, this section is intended to be administered and enforced in conjunction with the Oregon Specialty Codes.

5. **Abrogation and Severability.**

   A. This section is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this section and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

   B. This section and the various parts thereof are hereby declared to be severable. If any section, clause, sentence, or phrase of this section is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way affect the validity of the remaining portions of this section.

6. **Warning and Disclaimer of Liability.** The degree of flood protection required by this section is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This section does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages.

   This section shall not create liability on the part of the City of Burns, any officer or employee thereof, or the Federal Insurance Administrator for any flood damages that result from reliance on this section or any administrative decision lawfully made hereunder.

7. **Administration.** The City Manager (or their designee) is appointed to administer, implement, and enforce the City of Burns flood hazard regulations by granting or denying development permits in accordance with its provisions. The administrative duties, responsibilities, and requirements have been adopted by City resolution, which may be amended from time to time, and is hereby incorporated by reference.

8. **Establishment of Development Permit.** A floodplain development permit shall be obtained before construction or development begins within any area horizontally within the special flood hazard area established in subsection (3)(B) of this section. The development permit shall be required for all structures, including manufactured dwellings, and for all other development, as defined in subsection (2) of this section, including fill and other development activities.

9. **Application for Floodplain Development Permit.** Application for a development permit shall be made on forms furnished by the Floodplain Administrator. The application requires reproducible site plan(s) drawn to scale showing the nature, location, dimensions, and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing along with any other information required by the City of Burns development ordinance for the relevant land use application. The site plan(s) shall be prepared and sealed by an Oregon registered professional engineer or Oregon registered professional land surveyor. Specifically, at least the following information is required:

A. The applicant shall provide a site plan that depicts proposed elevation (in relation to mean sea level) of the lowest floor (including basement) and all attendant utilities of all new and substantially improved structures.

B. Proposed elevation in relation to mean sea level to which any nonresidential structure will be floodproofed.

C. Certification by a registered professional engineer or architect licensed in the state of Oregon that the floodproofing methods proposed for any nonresidential structure meet the floodproofing criteria for nonresidential structures in subsection (15)(C)(3) of this section.

D. Description of the extent to which any watercourse will be altered or relocated.

E. Base flood elevation data for subdivision proposals or other development when required per subsection (14)(F) of this section.

F. Substantial improvement calculation for any improvement, addition, reconstruction, renovation, or rehabilitation of an existing structure.

G. The amount and location of any fill or excavation activities proposed.

H. For development proposed in mapped floodplains without established base flood elevations, the applicant shall provide a report from an Oregon registered professional engineer that calculates the base flood elevation based upon methodologies consistent with FEMA guidance.

10. **Floodplain Area Development Permit Criteria.** Floodplain development permits shall be approved for permitted uses in the applicable zone for the requested floodplain development permit if all applicable criteria in this section is satisfied. Floodplain development permits may be approved for conditional uses in the applicable zone for the requested floodplain development permit if all applicable criteria in this section is satisfied.

A. The application includes all required site plan, survey and engineering information required by subsection (9) of this section; and

B. The application includes evidence and findings that demonstrate the proposed development complies with all applicable floodplain development standards; or

C. The application includes evidence and findings demonstrating how the proposed development can be found to satisfy the floodplain development permit variance criteria and the approving authority for the application concludes the below floodplain development permit variance criteria are satisfied.

In addition to satisfaction of the above criteria, the City of Burns may impose conditions of approval to assure applicable floodplain development permit standards and criteria will be satisfied by the proposed development. The City may also impose conditions of

approval requiring the applicant to furnish documentation as part of the development process to satisfy the City's floodplain administration responsibilities.

11. **Floodplain Variance Procedure.** The issuance of a variance is for floodplain development permit purposes only and it is the only applicable variance criteria for floodplain development permit variance. The criteria for floodplain development permit variance are limited to the extent of the requested variance related to floodplain development permit regulations only. Flood insurance premium rates are determined by federal statute according to actuarial risk and will not be modified by the granting of a variance.

12. **Floodplain Development Permit Variance Criteria.** Generally, variances 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, in conformance with the provisions of subsections (12)(B), (12)(D) and (13) of this section. As the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases.

    A. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

    B. Variances shall not be issued within any floodway if any increase in flood levels during the base flood discharge would result.

    C. Variances shall only be issued upon:

        (1) A showing of good and sufficient cause;

        (2) A determination that failure to grant the variance would result in exceptional hardship to the applicant;

        (3) A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing laws or ordinances.

    D. Variances may be issued by a community for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use; provided, that the criteria of subsections (12)(A) through (12)(C) of this section are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

13. **Floodplain Variance Notification.** Any applicant to whom a variance is granted shall be given written notice that the issuance of a variance to construct a structure below the base flood elevation will result in increased premium rates for flood insurance and that such construction below the base flood elevation increases risks to life and property. Such notification and a

record of all variance actions, including justification for their issuance, shall be maintained by the Floodplain Administrator.

14. **Provisions for Flood Hazard Reduction.** In all special flood hazard areas, the following standards shall be adhered to:

A. Alteration of Watercourses. The applicant shall provide detailed study and site plan that extends above and below the project area that demonstrates the flood carrying capacity within the altered or relocated portion of said watercourse is maintained. This study shall be prepared by an Oregon registered professional engineer and shall document consistency with applicable FEMA guidance for analyzing the flood carrying capacity based upon the scope and extent of the project. The study shall recommend maintenance best practices within the altered or relocated portion of said watercourse to ensure that the flood carrying capacity is not diminished.

B. Anchoring.

(1) All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

(2) All manufactured dwellings shall be anchored per subsection (15)(C)(4) of this section.

C. Construction Materials and Methods.

(1) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(2) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

D. Utilities and Equipment.

(1) Water Supply, Sanitary Sewer, and On-Site Waste Disposal Systems.

(a) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

(b) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.

(c) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding consistent with the Oregon Department of Environmental Quality.

(2) Electrical, Mechanical, Plumbing, and Other Equipment.

(a) Electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities shall be elevated above the base flood level one foot or more, or shall be designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during conditions of flooding. In addition, electrical, heating, ventilating, air-conditioning, plumbing, duct systems, and other equipment and service facilities shall meet all the requirements of this section if replaced as part of a substantial improvement.

E. Tanks.

(1) Underground tanks shall be anchored to prevent flotation, collapse, and lateral movement under conditions of the base flood.

(2) Above-ground tanks shall be installed above the base flood level one foot or more, or shall be anchored to prevent flotation, collapse, and lateral movement under conditions of the base flood.

F. Subdivision Proposals and Other Proposed Developments. All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) greater than 50 lots or five acres, whichever is the lesser, shall include within such proposals base flood elevation data for each parcel proposed for development.

G. Use of Other Base Flood Elevation Data. When base flood elevation data has not been provided in accordance with subsection (3) of this section, the Floodplain Administrator shall obtain, review, and reasonably utilize any base flood elevation data available from a federal, state, or other source, in order to administer this subsection (14). All new subdivision proposals and other proposed new developments (including proposals for manufactured dwelling parks and subdivisions) must meet the requirements of subsection (14)(F) of this section.

Base flood elevations shall be determined for development proposals that are five acres or more in size or are 50 lots or more, whichever is lesser, in any A Zone that does not have an established base flood elevation. Development proposals located within a riverine unnumbered A Zone shall be reasonably safe from flooding; the test of reasonableness includes use of historical data, high water marks, FEMA provided base level engineering data, and photographs of past flooding, etc., where available. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

H. Structures Located in Multiple or Partial Flood Zones. In coordination with the State of Oregon Specialty Codes:

(1) When a structure is located in multiple flood zones on the City of Burns' flood insurance rate maps (FIRMs) the provisions for the more restrictive flood zone shall apply.

(2) When a structure is partially located in a special flood hazard area, the entire structure shall meet the requirements for new construction and substantial improvements.

15. **Specific Standards for Riverine Flood Zones.** These specific standards shall apply to all new construction and substantial improvements in addition to the general standards contained in subsection (14) of this section.

A. Flood Openings. All new construction and substantial improvements with fully enclosed areas below the lowest floor (excluding basements) are subject to the following requirements. Enclosed areas below the base flood elevation, including crawl spaces, shall:

(1) Be designed to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters;

(2) Be used solely for parking, storage, or building access;

(3) Be certified by a registered professional engineer or architect or meet or exceed all of the following minimum criteria:

(a) A minimum of two openings.

(b) The total net area of nonengineered openings shall be not less than one square inch for each square foot of enclosed area, where the enclosed area is measured on the exterior of the enclosure walls.

(c) The bottom of all openings shall be no higher than one foot above grade.

(d) Openings may be equipped with screens, louvers, valves, or other coverings or devices; provided, that they shall allow the automatic flow of floodwater into and out of the enclosed areas and shall be accounted for in the determination of the net open area.

(e) All additional higher standards for flood openings in the State of Oregon Residential Specialty Codes Section R322.2.2 shall be complied with when applicable.

B. Garages.

(1) Attached garages may be constructed with the garage floor slab below the base flood elevation (BFE) in riverine flood zones, if the following requirements are met:

(a) If located within a floodway the proposed garage must comply with the requirements of subsection (16) of this section;

(b) The floors are at or above grade on not less than one side;

(c) The garage is used solely for parking, building access, and/or storage;

(d) The garage is constructed with flood openings in compliance with subsection (15)(A) of this section to equalize hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwater;

(e) The portions of the garage constructed below the BFE are constructed with materials resistant to flood damage;

(f) The garage is constructed in compliance with the standards in subsection (14) of this section; and

(g) The garage is constructed with electrical, and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

(2) Detached garages must be constructed in compliance with the standards for appurtenant structures in subsection (15)(C)(6) of this section or nonresidential structures in subsection (15)(C)(3) of this section depending on the square footage of the garage.

C. Special Flood Hazard Areas With Base Flood Elevations. In addition to the general standards listed in subsection (14) of this section, the following specific standards shall apply in special flood hazard areas with base flood elevations (BFE): Zones A1-A30, AH, and AE.

(1) Before Regulatory Floodway. In areas where a regulatory floodway has not been designated, no new construction, substantial improvement, or other development (including fill) shall be permitted within Zones A1-30 and AE on the community's flood insurance rate map (FIRM), unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

(2) Residential Construction. New construction, conversion to, and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated one foot or more above the base flood elevation (BFE). Enclosed areas below the lowest floor shall comply with the flood opening requirements in subsection (15)(A) of this section.

(3) Nonresidential Construction. New construction, conversion to, and substantial improvement of any commercial, industrial, or other nonresidential structure shall:

(a) Have the lowest floor, including basement, elevated one foot or more above the base flood elevation (BFE); or, together with attendant utility and sanitary facilities:

(1) Be floodproofed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water;

(2) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;

(3) Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this section based on their development and/or review of the structural design, specifications, and plans. Such certifications shall be provided to the Floodplain Administrator as set forth subsection (7) of this section.

(b) Nonresidential structures that are elevated, not floodproofed, shall comply with the standards for enclosed areas below the lowest floor in subsection (15)(A) of this section.

(c) Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building floodproofed to the base flood level will be rated as one foot below).

(4) Manufactured Dwellings.

(a) Manufactured dwellings to be placed (new or replacement) or substantially improved that are supported on solid foundation walls shall be constructed with flood openings that comply with subsection (15)(A) of this section;

(b) The bottom of the longitudinal chassis frame beam shall be at or above base flood elevation;

(c) Manufactured dwellings to be placed (new or replacement) or substantially improved shall be anchored to prevent flotation, collapse, and lateral movement during the base flood. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors (reference FEMA's "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques); and

(d) Electrical crossover connections shall be a minimum of 12 inches above base flood elevation (BFE).

(5) Recreational Vehicles. Recreational vehicles placed on sites are required to:

(a) Be on the site for fewer than 180 consecutive days; and

(b) Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or

(c) Meet the requirements of subsection (15)(C)(4) of this section, including the anchoring and elevation requirements for manufactured dwellings.

(6) Appurtenant (Accessory) Structures. Relief from elevation or floodproofing requirements for residential and nonresidential structures in riverine (noncoastal) flood zones may be granted for appurtenant structures that meet the following requirements:

(a) Appurtenant structures located partially or entirely within the floodway must comply with requirements for development within a floodway found in subsection (16) of this section;

(b) Appurtenant structures must only be used for parking, access, and/or storage and shall not be used for human habitation;

(c) In compliance with State of Oregon Specialty Codes, appurtenant structures on properties that are zoned residential are limited to one story structures less than 200 square feet, or 400 square feet if the property is greater than two acres in area and the proposed appurtenant structure will be located a minimum of 20 feet from all property lines. Appurtenant structures on properties that are zoned as nonresidential are limited in size to 120 square feet;

(d) The portions of the appurtenant structure located below the base flood elevation must be built using flood resistant materials;

(e) The appurtenant structure must be adequately anchored to prevent flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, during conditions of the base flood;

(f) The appurtenant structure must be designed and constructed to equalize hydrostatic flood forces on exterior walls and comply with the requirements for flood openings in subsection (15)(A) of this section;

(g) Appurtenant structures shall be located and constructed to have low damage potential;

(h) Appurtenant structures shall not be used to store toxic material, oil, or gasoline, or any priority persistent pollutant identified by the Oregon Department of

Environmental Quality unless confined in a tank installed in compliance with subsection (14)(E) of this section;

(i) Appurtenant structures shall be constructed with electrical, mechanical, and other service facilities located and installed so as to prevent water from entering or accumulating within the components during conditions of the base flood.

16. **Floodways.** Located within the special flood hazard areas established in subsection (3) of this section are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of the floodwaters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

A. Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless:

(1) Certification by a registered professional civil engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment shall not result in any increase in flood levels within the community during the occurrence of the base flood discharge; or

(2) A community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations; provided, that a conditional letter of map revision (CLOMR) is applied for and approved by the Federal Insurance Administrator, and the requirements for such revision as established under Volume 44 of the Code of Federal Regulations, Section 65.12, are fulfilled.

B. If the requirements of subsection (16)(A) of this section are satisfied, all new construction, substantial improvements, and other development shall comply with all other applicable flood hazard reduction provisions of subsection (14) of this section.

17. **Standards for Shallow Flooding Areas.** Shallow flooding areas appear on FIRMs as AO Zones with depth designations or as AH Zones with base flood elevations. For AO Zones the base flood depths range from one to three feet above ground where a clearly defined channel does not exist, or where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is usually characterized as sheet flow. For both AO and AH Zones, adequate drainage paths are required around structures on slopes to guide floodwaters around and away from proposed structures.

18. **Standards for AH Zones.** Development within AH Zones must comply with the standards in subsections (14), (15), and (17) of this section.

19. **Standards for AO Zones.** In AO Zones, the following provisions apply in addition to the requirements in subsections (14) and (17) of this section:

A. New construction, conversion to, and substantial improvement of residential structures and manufactured dwellings within AO Zones shall have the lowest floor, including basement, elevated above the highest grade adjacent to the building, at minimum one foot or more above the depth number specified on the flood insurance rate maps (FIRMs) (at least two feet if no depth number is specified). For manufactured dwellings the lowest floor is considered to be the bottom of the longitudinal chassis frame beam.

B. New construction, conversion to, and substantial improvements of nonresidential structures within AO Zones shall either:

(1) Have the lowest floor (including basement) elevated above the highest adjacent grade of the building site, at minimum one foot or more above the depth number specified on the flood insurance rate maps (FIRMs) (at least two feet if no depth number is specified); or

(2) Together with attendant utility and sanitary facilities, be completely floodproofed to or above the depth number specified on the FIRMs (or a minimum of two feet above the highest adjacent grade if no depth number is specified), so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. If this method is used, compliance shall be certified by a registered professional engineer or architect as stated in subsection (15)(C)(3)(a)(3) of this section.

C. Recreational vehicles placed on sites within AO Zones on the community's flood insurance rate maps (FIRMs) shall either:

(1) Be on the site for fewer than 180 consecutive days; and

(a) Be fully licensed and ready for highway use, on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions; or

(b) Meet the elevation requirements of subsection (19)(A) of this section, and the anchoring and other requirements for manufactured dwellings of subsection (15)(C)(4) of this section.

D. In AO Zones, new and substantially improved appurtenant structures must comply with the standards in subsection (15)(C)(6) of this section.

E. In AO Zones, enclosed areas beneath elevated structures shall comply with the requirements in subsection (15)(A) of this section.

EXHIBIT C

RESOLUTION NO. _____

A RESOLUTION TO ADOPT DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR FOR THE CITY OF BURNS

WHEREAS, the City of Burns has adopted flood hazard regulations under Section 18.30.325 of the Burns Municipal Code; and

WHEREAS, the City Manager (or their designee) is appointed to administer, implement, and enforce the flood hazard regulations under Section 18.30.325 by granting or denying development permits in accordance with its provisions; and

WHEREAS, the City Council of the City of Burns deems that public health, safety, and the general welfare of the public is benefitted through the effective administration of the flood hazard regulations;

NOW, THEREFORE, THE CITY OF BURNS RESOLVES AS FOLLOWS, to adopt the Duties and Responsibilities of the Floodplain Administrator as stated in Exhibit "A" and which may be modified from time to time as deemed necessary by virtue of adopted resolution.

PASSED by the City Council and signed by me in authentication of its passage this _____ day of _____, 20___.

_____
Mayor

ATTEST: _____
City Recorder

"EXHIBIT A"

DUTIES AND RESPONSIBILITIES OF THE FLOODPLAIN ADMINISTRATOR

Duties of the floodplain administrator, or their designee, shall include, but not be limited to:

1. **PERMIT REVIEW**
   Review all development permits to determine that:

   A. The permit requirements of the flood hazard regulations ordinance have been satisfied;

   B. All other required local, state, and federal permits have been obtained and approved.

   C. Review all development permits to determine if the proposed development is located in a floodway. If located in the floodway assure that the floodway provisions in section 18.30.325.16 of the Burns Municipal Code are met; and

   D. Review all development permits to determine if the proposed development is located in an area where Base Flood Elevation (BFE) data is available either through the Flood Insurance Study (FIS) or from another authoritative source. If BFE data is not available, then ensure compliance with the provisions of section 18.30.325.14.G of the Burns Municipal Code; and

   E. Provide to building officials the Base Flood Elevation (BFE) (plus one foot) applicable to any building requiring a development permit.

   F. Review all development permit applications to determine if the proposed development qualifies as a substantial improvement as defined in section 18.30.325.2 of the Burns Municipal Code.

   G. Review all development permits to determine if the proposed development activity is a watercourse alteration. If a watercourse alteration is proposed, ensure compliance with the provisions in section 18.30.325.14 of the Burns Municipal Code.

   H. Review all development permits to determine if the proposed development activity includes the placement of fill or excavation.

2. **INFORMATION TO BE OBTAINED AND MAINTAINED**
   The following information shall be obtained and maintained and shall be made available for public inspection as needed:

   A. Obtain, record, and maintain the actual elevation (in relation to mean sea level) of the lowest floor (including basements) and all attendant utilities of all new or substantially improved structures where Base Flood Elevation (BFE) data is provided through the Flood Insurance Study (FIS), Flood Insurance Rate Map (FIRM), or obtained in accordance with section 18.30.325.14.G of the Burns Municipal Code.

   B. Obtain and record the elevation (in relation to mean sea level) of the natural grade of the building site for a structure prior to the start of construction and the placement of any fill

and ensure that the requirements of Burns Municipal Code section 18.30.325.16, and all permit review procedures outlined herein in section 1 are adhered to.

C. Upon placement of the lowest floor of a structure (including basement) but prior to further vertical construction, obtain documentation, prepared and sealed by a professional licensed surveyor or engineer, certifying the elevation (in relation to mean sea level) of the lowest floor (including basement).

D. Where base flood elevation data are utilized, obtain As-built certification of the elevation (in relation to mean sea level) of the lowest floor (including basement) prepared and sealed by a professional licensed surveyor or engineer, prior to the final inspection.

E. Maintain all Elevation Certificates (EC) submitted to the community;

F. Obtain, record, and maintain the elevation (in relation to mean sea level) to which the structure and all attendant utilities were floodproofed for all new or substantially improved floodproofed structures where allowed under this ordinance and where Base Flood Elevation (BFE) data is provided through the FIS, FIRM, or obtained in accordance with Burns Municipal Code section 18.30.325.14.G.

G. Maintain all floodproofing certificates required under this ordinance;

H. Record and maintain all variance actions, including justification for their issuance;

I. Obtain and maintain all hydrologic and hydraulic analyses performed as required under Burns Municipal Code section 18.30.325.16.

J. Record and maintain all Substantial Improvement and Substantial Damage calculations and determinations as required herein under section 5.

K. Maintain for public inspection all records pertaining to the provisions of this ordinance.

3. REQUIREMENT TO NOTIFY OTHER ENTITIES AND SUBMIT NEW TECHNICAL DATA

COMMUNITY BOUNDARY ALTERATIONS

The Floodplain Administrator shall notify the Federal Insurance Administrator in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed authority or no longer has authority to adopt and enforce floodplain management regulations for a particular area, to ensure that all Flood Hazard Boundary Maps (FHBM) and Flood Insurance Rate Maps (FIRM) accurately represent the community's boundaries. Include within such notification a copy of a map of the community suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority.

WATERCOURSE ALTERATIONS

Notify adjacent communities, the Department of Land Conservation and Development, and other appropriate state and federal agencies, prior to any alteration or relocation of a watercourse, and submit evidence of such notification to the Federal Insurance Administration. This notification shall be provided by the applicant to the Federal Insurance Administration as a Letter of Map Revision (LOMR) along with either:

A. A proposed maintenance plan to assure the flood carrying capacity within the altered or relocated portion of the watercourse is maintained; or

B. Certification by a registered professional engineer that the project has been designed to retain its flood carrying capacity without periodic maintenance.

The applicant shall be required to submit a Conditional Letter of Map Revision (CLOMR) when required under section 4 below. Ensure compliance with all applicable requirements in section 4 herein, and section 18.30.325.14.A of the Burns Municipal Code.

4. REQUIREMENT TO SUBMIT NEW TECHNICAL DATA

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, a community shall notify the Federal Insurance Administrator of the changes by submitting technical or scientific data in accordance with Title 44 of the Code of Federal Regulations (CFR), Section 65.3. The community may require the applicant to submit such data and review fees required for compliance with this section through the applicable FEMA Letter of Map Change (LOMC) process.

The Floodplain Administrator shall require a Conditional Letter of Map Revision prior to the issuance of a floodplain development permit for:

A. Proposed floodway encroachments that increase the base flood elevation; and

B. Proposed development which increases the base flood elevation by more than one foot in areas where FEMA has provided base flood elevations but no floodway.

An applicant shall notify FEMA within six (6) months of project completion when an applicant has obtained a Conditional Letter of Map Revision (CLOMR) from FEMA. This notification to FEMA shall be provided as a Letter of Map Revision (LOMR).

5. SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE ASSESSMENTS AND DETERMINATIONS

Conduct Substantial Improvement (SI) (as defined in section 18.30.325.2 of the Burns Municipal Code) reviews for all structural development proposal applications and maintain a record of SI calculations within permit files in accordance with section 2 herein. Conduct Substantial Damage (SD) (as defined in section 18.30.325.2 of the Burns Municipal Code) assessments when structures are damaged due to a natural hazard event or other causes. Make SD determinations whenever structures within the special flood hazard area (as established in section 18.30.325.3.B of the Burns Municipal Code) are damaged to the extent that the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

EXHIBIT D
11/15/2023

DLCD

Department of Land Conservation and Development

PAPA Current Version: Burns - Amendment 003-23

Submitted On-line/Sent To DLCD: 11/15/2023

Local File #: LPAF-002-2023

1st Hearing: 12/20/2023 **Days Difference:** 35

Final Hearing: **Days Difference:**

Proposal Type:

- ☐ Comprehensive Plan Map Change
- ☐ Zoning Map Change
- ☐ Comprehensive Plan Map & Zoning Map Change
- ☐ Comprehensive Plan Text Change
- ☑ Land Use Regulation Change
- ☐ UGB using Simplified Method (div 38)
- ☐ UGB amendment by city with population less than 2,500 within UGB (div24)
- ☐ UGB amendment of 50 acres or less by a city with population 2,500 or more within UGB (div 24)
- ☐ UGB amendment adding more than 50 acres by city with population 2,500 or more within UGB (div 24)
- ☐ UGB amendment that adds more than 100 acres by Metro (div 24)
- ☐ Urban Reserve designation by Metro or a city with population 2,500 or more within UGB
- ☐ Urban Reserve amendment to add over 50 acres by a city with population 2,500 or more within UGB
- ☐ Urban Reserve designation or amendment by a city with population less than 2,500 within UGB
- ☐ Urban Reserve amendment by Metro
- ☐ Urban Reserve Other
- ☐ Annexation
- ☑ Other - Adoption of new Flood Insurance Rate Maps
- ☐ Periodic Review Task

Summary of Proposed Change: Amendment to Section 18.30.325.3.B of the City of Burns Zoning Ordinance to reflect adoption of updated FEMA Flood Insurance Rate Maps (FIRM) for the City of Burns.

An exception to a statewide planning goal is proposed: No

Goals Subject to Exception:

Total Acres: 0.00

Locations:

Contacts:

Jay Harland

Documents:

Uploaded	Document Name
11/15/2023	Revision_Amended_Flood_Hazard_Regulations_Draft_11-15-23_2023-11-15_12-23-45.pdf

Agenda Item
8.1

MEMORANDUM

To: **Planning Commission**

From: **Planning & Zoning Department**

Date: **December 26, 2023**

Subject: **Professional Office Services in Residential Zones**

On September 27, 2023, the City Council adopted a new Zoning Ordinance for the City of Burns which then took effect on October 27, 2023. During the preparation of the new Zoning Ordinance, one of the topics that was raised for discussion by staff was that professional office services were permitted by-right within residential zones. This is an uncommon type of use to be allowed as an outright permitted use in a residential zone with minimal restrictions. There are some types of office uses (e.g., dental and medical offices) that can and often do generate fairly high numbers of vehicle trips and parking demand. There seemed to be some consensus amongst both the Code Advisory Committee and the Planning Commission that professional office uses should be prohibited or perhaps conditionally permitted or otherwise restricted within residential zones; however, to do so as part of the new Zoning Ordinance regulations would have triggered the requirement to send Measure 56 notices to all property owners within the residential zones throughout the city. Under state law, when a city or county proposes a change to a zoning map or regulation that would limit or prohibit uses that were previously allowed, the city or county must send notice of the proposed change to all property owners that would be affected.

Given this legal requirement and the fact that adoption of the new zoning ordinance was a high priority to the City Council, it was agreed that discussion on the topic of prohibiting or restricting office uses in residential zones should be delayed until the new code was formally adopted and in effect, at which time the subject could be taken up for consideration without any timing constraints. The new Zoning Ordinance has been in effect for approximately two months, and as such, staff is seeking input from the Planning Commission as to whether it thinks that prohibiting or otherwise limiting professional office uses in residential zones is a matter that should be considered as a code amendment.