STAND UP TO FACTORY FARMS

September 8, 2021

Submitted via email

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RE: COMMENTS IN OPPOSITION TO NOBLE DAIRY'S PROPOSAL TO SUBSTANTIALLY CHANGE ITS ANIMAL WASTE MANAGEMENT PLAN IN ORDER TO EXPAND AND BECOME OREGON'S NEWEST MEGA DAIRY CAFO

Dear Mr. Matthews and Ms. Moore:

Noble Dairy—a large, tier 1 confined animal feeding operation (CAFO) sited in a Special Flood Hazard Area (SFHA) on the banks of the Applegate River—seeks to become Oregon's newest mega dairy CAFO. Specifically, Noble Dairy proposes to substantially change its animal waste management plan (AWMP) to accommodate its plans to ***nearly double*** the number of cows it confines. Stand Up to Factory Farms—a coalition of animal welfare, environmental, family farm, public health, rural advocacy, and wildlife protection organizations with hundreds of thousands of members and supporters in Oregon—submits the following comments in opposition to this proposal and requests a hearing under Oregon Administrative Rule 340-045-0027.

As the recent Lost Valley Farm regulatory catastrophe illustrates, mega dairy CAFOs constitute unjustifiable risks to Oregon's environment, public health,

animal welfare, and rural communities.[1] Accordingly, the commenting coalition urges the Oregon Department of Agriculture (ODA) and the Oregon Department of Environmental Quality (ODEQ) (collectively "the Agencies") to (1) deny the proposed substantial changes to Noble Dairy's AWMP and require Noble Dairy to apply for an individual National Pollutant Discharge Elimination System (NPDES) permit that addresses and mitigates the unique environmental risks that this CAFO already presents, and (2) institute a moratorium on all new or expanding mega dairy CAFOs in Oregon.

I. THE COMMENTING COALITION

Stand Up to Factory Farms is a coalition of local, state, and national organizations concerned about the harmful impacts of mega dairy CAFOs on Oregon's family farms, communities, environment, public health, and animal welfare.[2]

II. FACTUAL BACKGROUND

Noble Dairy is a large, tier 1 dairy CAFO sited in an SFHA[3] on the banks of the Applegate River in Josephine County, Oregon.[4] It proposes to substantially

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[1] Lost Valley Farm was a permitted mega dairy CAFO in Boardman, Oregon that spilled manure and other waste; went into business without a legal and practical source of water; resorted to the stockwatering exemption in a designated Critical Groundwater Area and extracted water from an already depleted groundwater aquifer; went bankrupt and failed to pay its suppliers for goods and services rendered; and violated its permit more than two hundred times. The state was forced to expend its limited resources to shut down this mega dairy CAFO and manage the fallout.

[2] Members of Stand Up to Factory Farms include Columbia Riverkeeper, Friends of the Columbia Gorge, Friends of Family Farmers, Humane Voters Oregon, Oregon Rural Action, WaterWatch of Oregon, Animal Legal Defense Fund, Center for Biological Diversity, Center for Food Safety, Food & Water Watch, and Food & Water Action. *The Coalition*, STAND UP TO FACTORY FARMS, https://standuptofactoryfarms.org/about-us/the-coalition/ (last visited Sep. 7, 2021).

[3] Federal Emergency Management Agency (FEMA), National Flood Insurance Program, Flood Insurance Rate Map No. 41033C0740E, Josephine County, Oregon and Incorporated Areas, Panel 0740E (Dec. 3, 2009) ("FIRM 1") (Attach. 1).

[4] The CAFO is owned by Jerry Noble and co-operated by Larry and Sharon Noble, d.b.a. Jerry Noble. It is registered to the NPDES General Permit #01-2016 under Master Address number 63943. ODA AND ODEQ, NOTICE OF PUBLIC PARTICIPATION OPPORTUNITY, PROPOSED SUBSTANTIAL CHANGE FOR CONFINED ANIMAL FEEDING OPERATION (CAFO) IN AREA IV (Aug. 4, 2021),

change its AWMP by ***nearly doubling*** the number of cows it is permitted to confine.[5] This CAFO is already permitted to confine 1,630 cows, and it proposes to increase this number to 2,900 cows.[6] If the Agencies approve this proposal, Noble Dairy will become Oregon's newest mega dairy CAFO.[7]

In 2019, Noble Dairy reported that it generated 748,104 cubic feet of solid manure and disposed of 12,420 cubic feet of solid manure on fields.[8] It reported that it generated 1,460,094 cubic feet—or ***10,922,262 gallons***—of liquid manure, manure-contaminated runoff, and manure-contaminated process water.[9] The CAFO also reported that it disposed of 2,586,722 cubic feet—or ***19,350,024 gallons***—of liquid waste on 1,412 acres of nearby fields ("disposal fields").[10]

Noble Dairy failed to specify exactly how much additional manure would result from an additional 1,270 cows.[11] However, since Noble Dairy proposes to nearly double the current number of cows, it stands to reason that each of the above figures will also nearly double. And since it seems that this CAFO plans to continue its practice of disposing of manure and manure-contaminated runoff and process water by applying it to fields, approval of the proposed substantial changes to the AWMP will result in nearly ***40,000,000 gallons*** of liquid waste being applied to the disposal fields each year. Accordingly, the quantity of pollutants discharged to the environment will also nearly double, including dangerous water pollutants like nitrates and dangerous air pollutants like hydrogen sulfide. Finally, the water that this CAFO consumes—for irrigation, cleaning, drinking water for the cows, etc.—will also nearly double.

The Applegate River, a "major tributary of the Rogue River" that "drains a large portion of the eastern Siskiyou Mountains," is an invaluable natural

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https://www.oregon.gov/oda/programs/NaturalResources/Documents/CAFOPublicNotices/2021/NoblePublicNotice.pdf?utm_medium=email&utm_source=Govdelivery.

5 NUTRIENT MANAGEMENT PLAN FOR NOBLE DAIRY, SUPPLEMENTAL DOCUMENTS, MODIFICATION OF ANIMAL NUMBERS TO CONFINED ANIMAL FEEDING OPERATION NPDES OR WPCF PERMIT REGISTRATIONS (Rev. September 2020) ("AWMP").

6 *Id.*

7 Legislation that would enact a mega dairy moratorium, which was introduced this year in Oregon, defines a "mega dairy" as one that has 2,500 cows or more. S.B. 0583, 81st Leg. Assemb., 2021 Reg. Session (Or. 2021); H.B. 2924, 81st Leg. Assemb., 2021 Reg. Session (Or. 2021). These comments adopt that definition.

8 AWMP, *supra* note 5, at 2.

9 *Id.*

10 *Id.*

11 This failure violates ORA 340-051-0015(e), which requires that new, modified, or expanded facilities and operations submit to the Agencies the "estimated volume of wastes to be collected and disposed of[.]"

resource.[12] The river and its tributaries are home to many species of fish, including steelhead, rainbow, cutthroat, and brook trout,[13] and the river's drainage is home to the endangered Siskiyou Mountains salamander.[14] The river and its shoreline are used for many forms of recreation, including camping, swimming, and hiking.[15]

III. COMMENTS

The commenting coalition urges the Agencies to deny the proposed substantial changes to Noble Dairy's AWMP, which substantial evidence shows is already noncompliant with NPDES General Permit #01-2016.[16] Concurrently, the commenting coalition urges the Agencies to require Noble Dairy to apply for an individual NPDES permit.[17] Given the circumstances, the proposed substantial changes to the AWMP would exacerbate the already significant risk that this CAFO poses to the environment. Accordingly, to approve the substantial changes to the AWMP would be arbitrary, capricious, and otherwise contrary to law.

The commenting coalition further urges the Agencies to institute a moratorium on all new or expanding mega dairy CAFOs in Oregon. Substantial evidence shows that such CAFOs constitute unjustifiable risks to the environment, public health, environmental justice communities, animal welfare, and rural communities.

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12 *Applegate River*, U.S. FOREST SERV., https://www.fs.usda.gov/recarea/rogue-siskiyou/recarea/?recid=74287 (last visited Sep. 7, 2021).

13 *Id.*

14 DAVID CLAYTON, DEANNA OLSON, & RICHARD NAUMAN, U.S. FOREST SERV., CONSERVATION ASSESSMENT FOR THE SISKIYOU MOUNTAINS SALAMANDER (*PLETHODON STORMI*) 8–9 (2005), https://www.blm.gov/or/plans/surveyandmanage/files/ca-ha-plethodon-stormi-2005-09-01.pdf.

15 Applegate River, *supra* note 12.

16 ODA & DEQ, OREGON CONFINED ANIMAL FEEDING OPERATION NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT NUMBER 01-2016 (Apr. 20, 2016) ("General Permit").

17 Any interested person may petition the Agencies to require an individual NPDES permit. Or. Admin. R. 340-045-0033(10)(c). Grounds for requiring an individual NPDES permit include that the activity significantly contributes pollution or "creates other environmental problems," that the permittee is out of compliance with the General Permit or any applicable law, or "[a]ny other relevant factors." Or. Admin. R. 340-045-0033(10)(c)(A), (B), and (F).

A. The Agencies should deny the proposed substantial changes to Noble Dairy's AWMP and require Noble Dairy to apply for an individual NPDES permit.

Noble Dairy is required to ensure that its AWMP complies with the terms and conditions of the General Permit.[18] The AWMP already fails to comply with these terms and conditions, and not without consequence—the CAFO's location in an SFHA on the Applegate River makes it a ticking environmental time bomb. The proposed substantial changes to the AWMP would exacerbate existing risk to the environment by nearly doubling the quantity of manure and other pollutants that the CAFO produces, making any flood-related discharges to the Applegate River even more catastrophic.[19] The Agencies should deny the proposed substantial changes to the AWMP and require Noble Dairy to apply for an individual NPDES permit that addresses and mitigates the unique environmental risks that this CAFO already presents.

The General Permit provides that AWMPs must, among other things:

- "[E]nsure collection, handling, and storage of contaminated stormwater runoff from the production area, manure, litter, and process wastewater in compliance with the requirements of [Section 2],"[20] including the requirement that "permit registrant[s] must ***site***, design, construct, ***operate***, and maintain all waste storage facilities to contain all manure, litter, process wastewater, and stormwater runoff and direct precipitation from a 25-year, 24-hour rainfall event[.]"[21]
- "[P]revent direct contact of confined animals with surface water,"[22] which means "any situation where animals in the production area have free access and are allowed to loiter or drop waste in surface water."[23]

Noble Dairy is not in compliance with these terms and conditions—nor can it be so long as it is sited in an SFHA on the banks of the Applegate River, as depicted

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18 General Permit, *supra* note 16, at S3.C.1.

19 *See* Or. Admin. R. 603-074-0005 ("In interpreting and applying these rules [the Agencies] may consider . . . the potential for a particular confined animal feeding operation to cause a discharge of animal wastes into the waters of the state.").

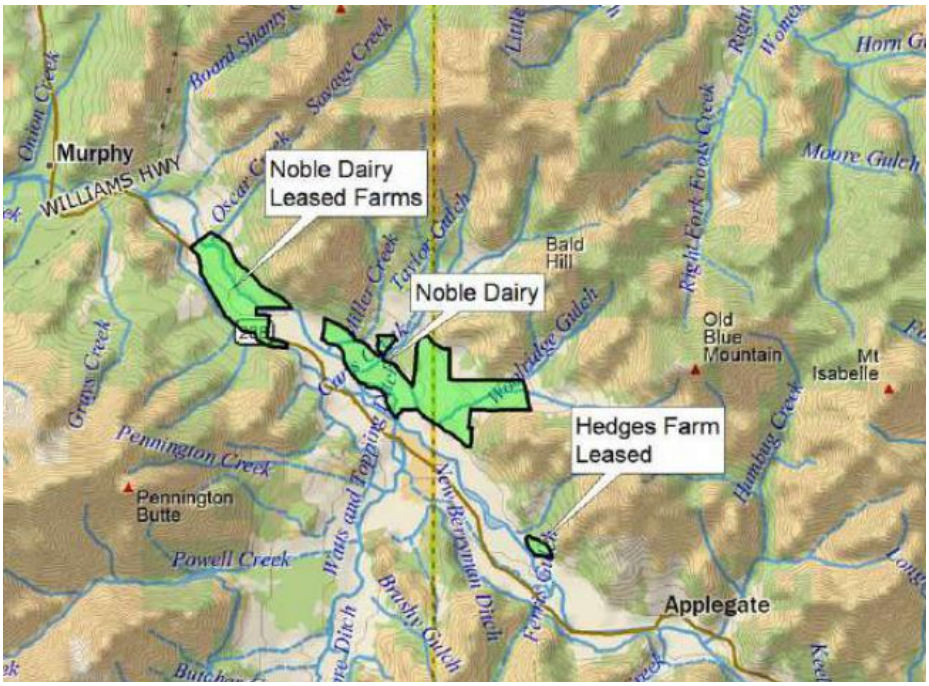
20 General Permit, *supra* note 16, at S3.C.2.(a).

21 *Id.* at S2.E.2 (emphasis added).

22 *Id.* at S3.C.2.(e).

23 *Id.* at S2.D.

below.[24] One of the disposal field areas, the "Noble Dairy Leased Farms," even ***straddles*** the Applegate River.[25]



Noble Dairy's production area is a stone's throw from the Applegate River. This area includes cow confinement buildings and two large liquid manure impoundments ("Big Pond 1" and "Big Pond 2"), as depicted below.[26] The "Home 2" and "Home 3" disposal fields, which Noble Dairy uses as "vegetated treatment areas," are all that lies between the production area and the Applegate River.[27]

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24 AWMP, *supra* note 5, at 9.

25 *Id.*

26 *Id.* at 22.

27 *Id.* at 21; 23 (describing and depicting "Home 2" and "Home 3" fields).

As depicted below,[28] "Big Pond 1" is approximately 1,370 feet from the Applegate River and "Big Pond 2" is approximately 4,321 feet from the Applegate River. In addition, Carris Creek also runs right alongside the western side of the production area, with "Big Pond 1" lying approximately 258 feet away from the creek and "Big Pond 2" lying approximately 636 feet away.

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28 GOOGLE MAPS, https://www.google.com/maps/place/Noble+Dairy/@42.3059917,-123.2465208,972m/data=!3m1!1e3!4m5!3m4!1s0x0:0x8d9a9346d87d611!8m2!3d42.305107!4d-123.2434631 (last visited Sep. 7, 2021).


Caris Creek
Applegate River
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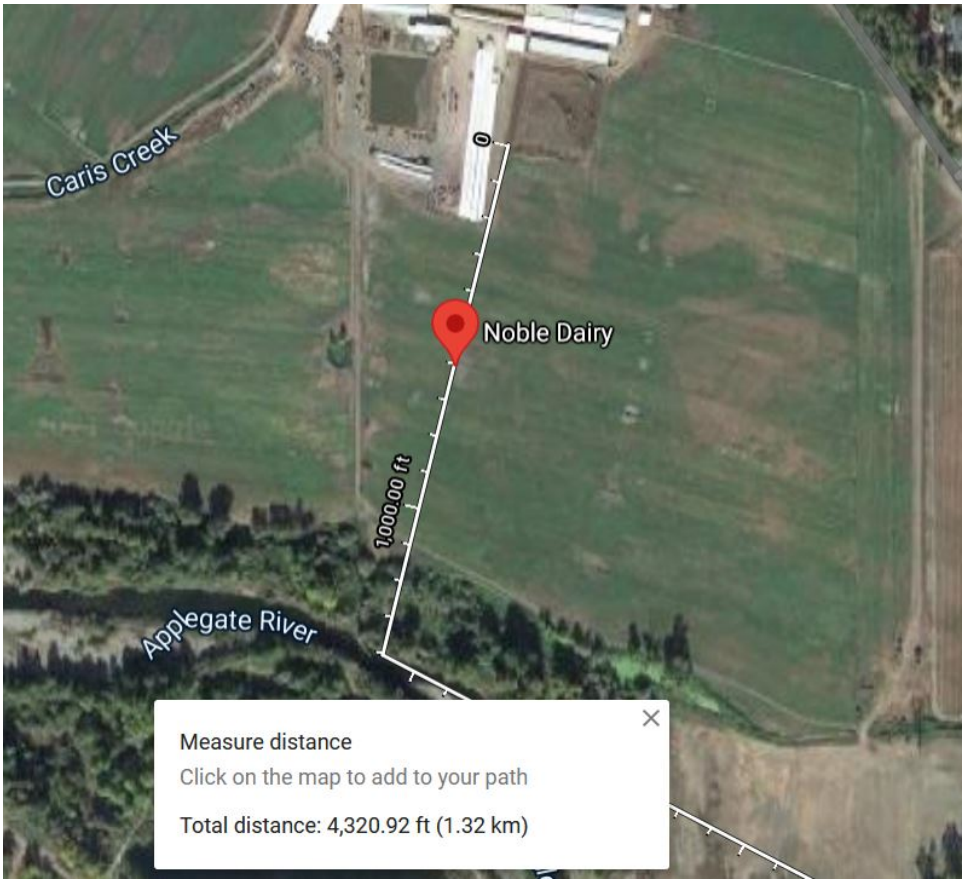
Measure distance
Click on the map to add to your path
Total distance: 1,369.51 ft (417.43 m)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Total distance: 4,320.92 ft (1.32 km)


Kubli Rd
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Total distance: 258.29 ft (78.73 m)
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Northside Rd
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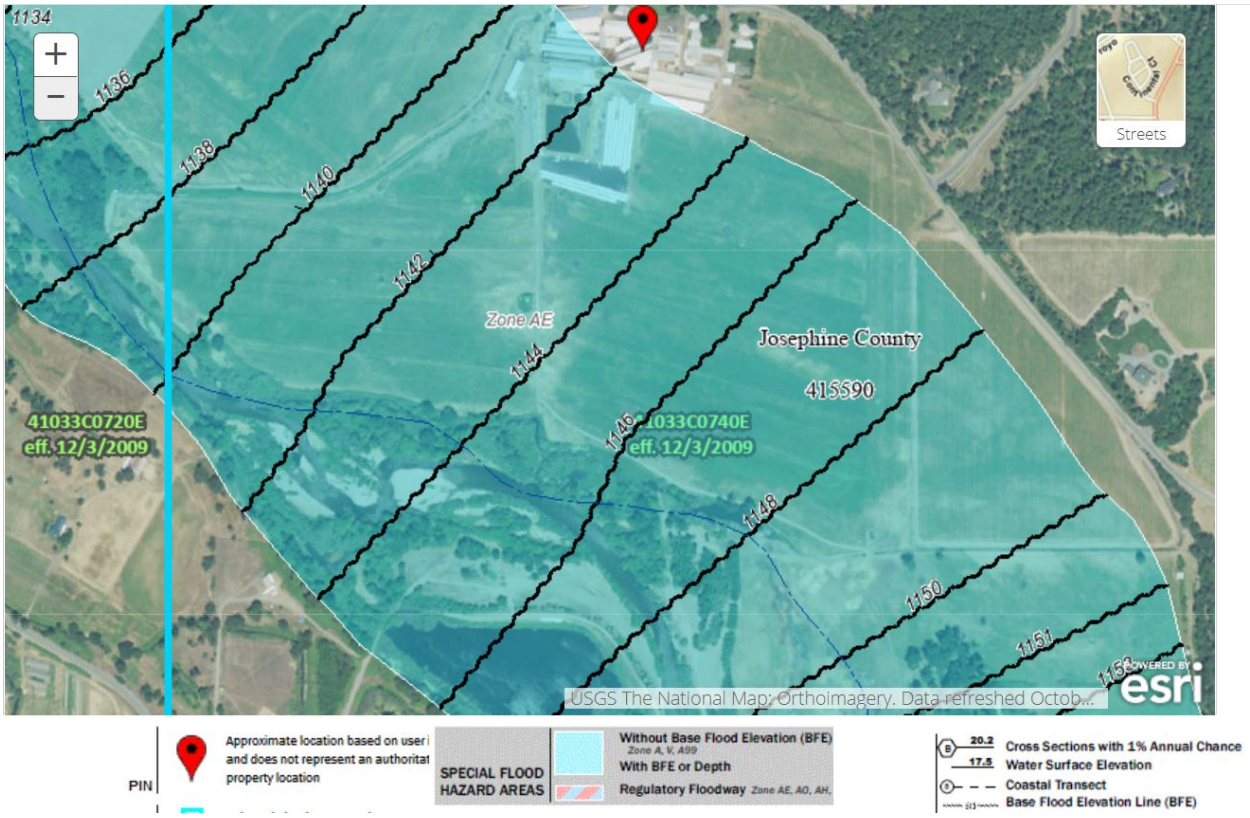
Caris Creek
Noble Dairy
Measure distance
Click on the map to add to your path
Total distance: 636.16 ft (193.90 m)

As depicted below, much of the production area (as well as disposal fields "Home 2" and "Home 3") lies beneath a SFHA, as designated by the Federal Emergency Management Agency (FEMA).[29] This includes many of the buildings where cows are confined. It also includes "Big Pond 1," which contains 2,147,530 gallons of liquid manure, and "Big Pond 2," which contains 2,312,939 gallons of liquid manure.[30] Together, these "ponds" alone hold nearly ***4.5 million gallons of liquid manure***. If these "ponds" were inundated in a flood, the environmental impact would be catastrophic.



As depicted below, almost all of Noble Dairy's disposal fields—including "Home 4," "Mac L," "Lynch L," "Andreas 1(L)," "Andreas 2(L)," "Andreas 3(L),"

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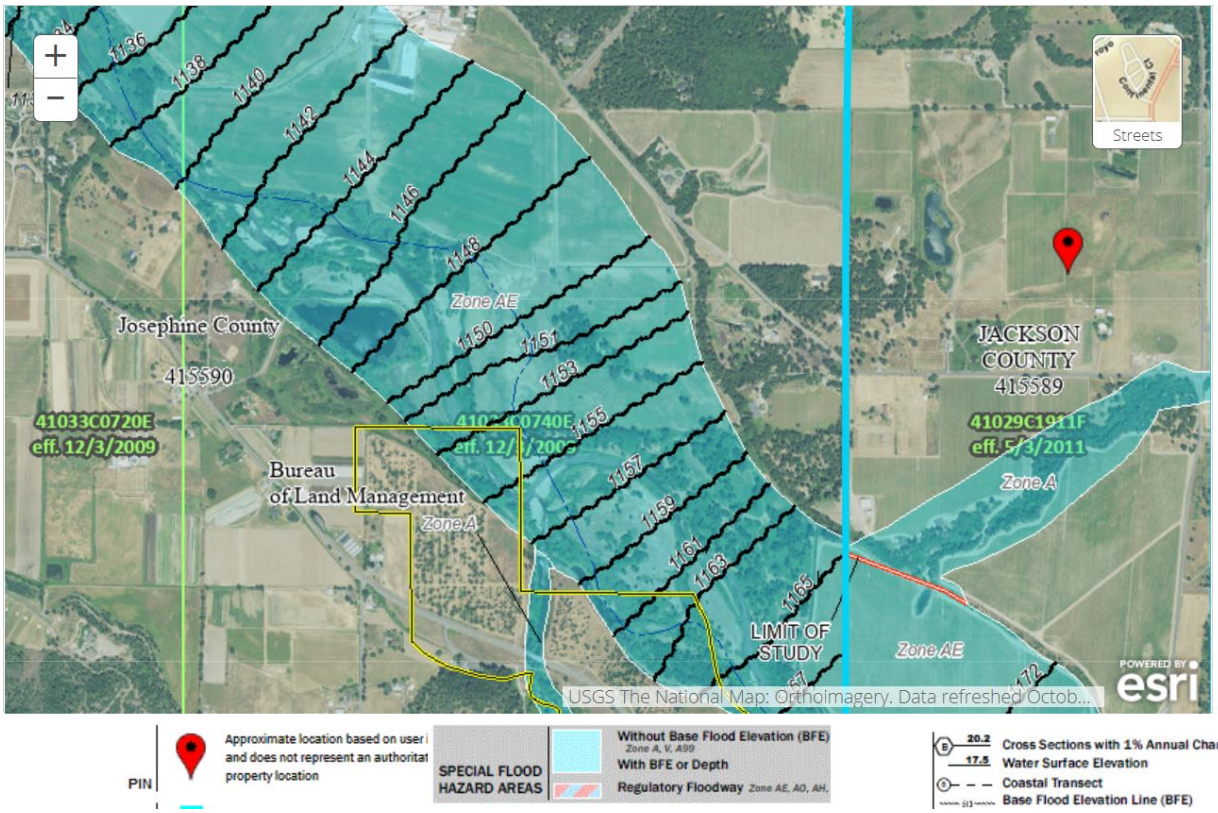
[29] FIRM 1, *supra* note 3 (Attach. 1); *see Special Flood Hazard Area (SFHA)*, FEMA, fema.gov/glossary/special-flood-hazard-area-sfha (last visited Sep. 7, 2021) (defining "Special Flood Hazard Area" as "[a]n area having special flood, mudflow or flood-related erosion hazards and shown on . . . a Flood Insurance Rate Map (FIRM) Zone ***A***, AO, A1-A30, ***AE***, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/A1-A30, V1-V30, VE or V" (emphasis added)); FEMA, UNIT 3: NFIP FLOOD STUDIES AND MAPS 3-5 (explaining that SFHAs have a 4% chance of being hit with a 25-year flood within one year, a 34% chance within ten years, a 56% chance within twenty years, a 71% chance within thirty years, and an 87% chance within fifty years).

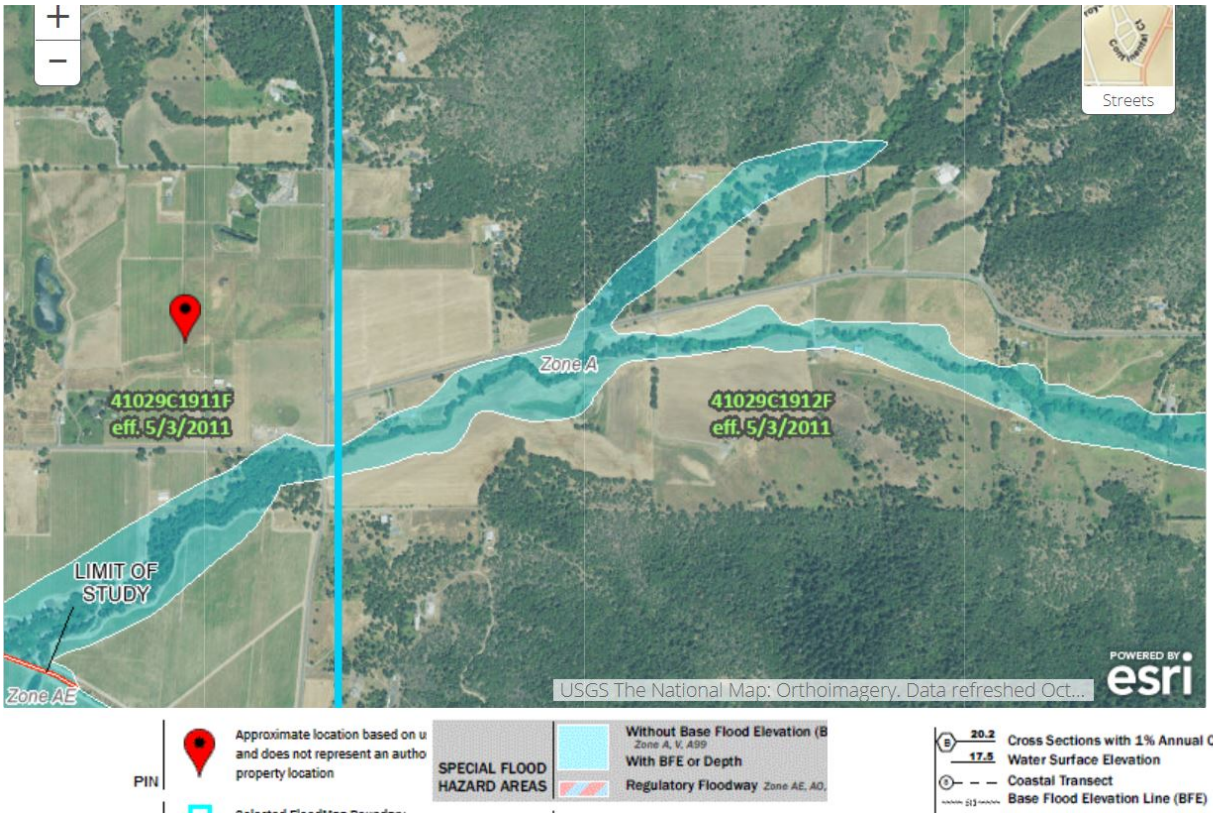
[30] AWMP, *supra* note 5, at 9.

"Rice," "Gallos 1," "Gallos 2," "Gallos 3," "SorensonsL," "HydeL," "HannaganL," "TwinL," and "HeisnersL"[31]—also lie at least partially beneath a FEMA-designated SFHA.[32] If these disposal fields were inundated in a flood, the environmental impact would be catastrophic.



31 *Id.* at 23; 24.

32 FEMA, National Flood Insurance Program, Flood Insurance Rate Map No. 41029C1911F, Josephine County, Oregon and Incorporated Areas, Panel 1911F (May 3, 2011) (Attach. 2); FEMA, National Flood Insurance Program, Flood Insurance Rate Map No. 41029C1912F, Josephine County, Oregon and Incorporated Areas, Panel 1912F (May 3, 2011) (Attach. 3); FEMA, National Flood Insurance Program, Flood Insurance Rate Map No. 41033C0710E, Josephine County, Oregon and Incorporated Areas, Panel 0710E (Dec. 3, 2009) (Attach. 4); FEMA, National Flood Insurance Program, Flood Insurance Rate Map No. 41033C0720E, Josephine County, Oregon and Incorporated Areas, Panel 0720E (Dec. 3, 2009) (Attach. 5); FEMA, National Flood Insurance Program, Flood Insurance Rate Map No. 41033C0708E, Josephine County, Oregon and Incorporated Areas, Panel 0708E (Dec. 3, 2009) (Attach. 6).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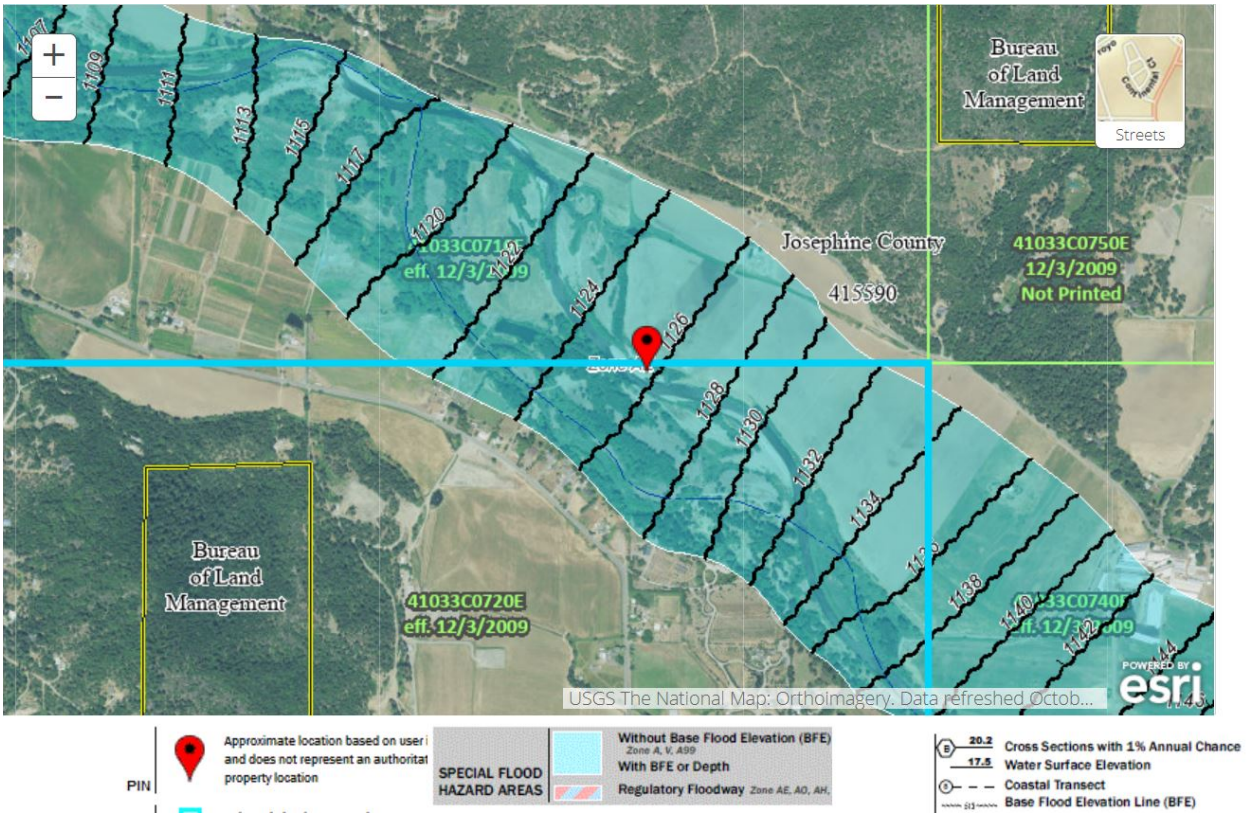
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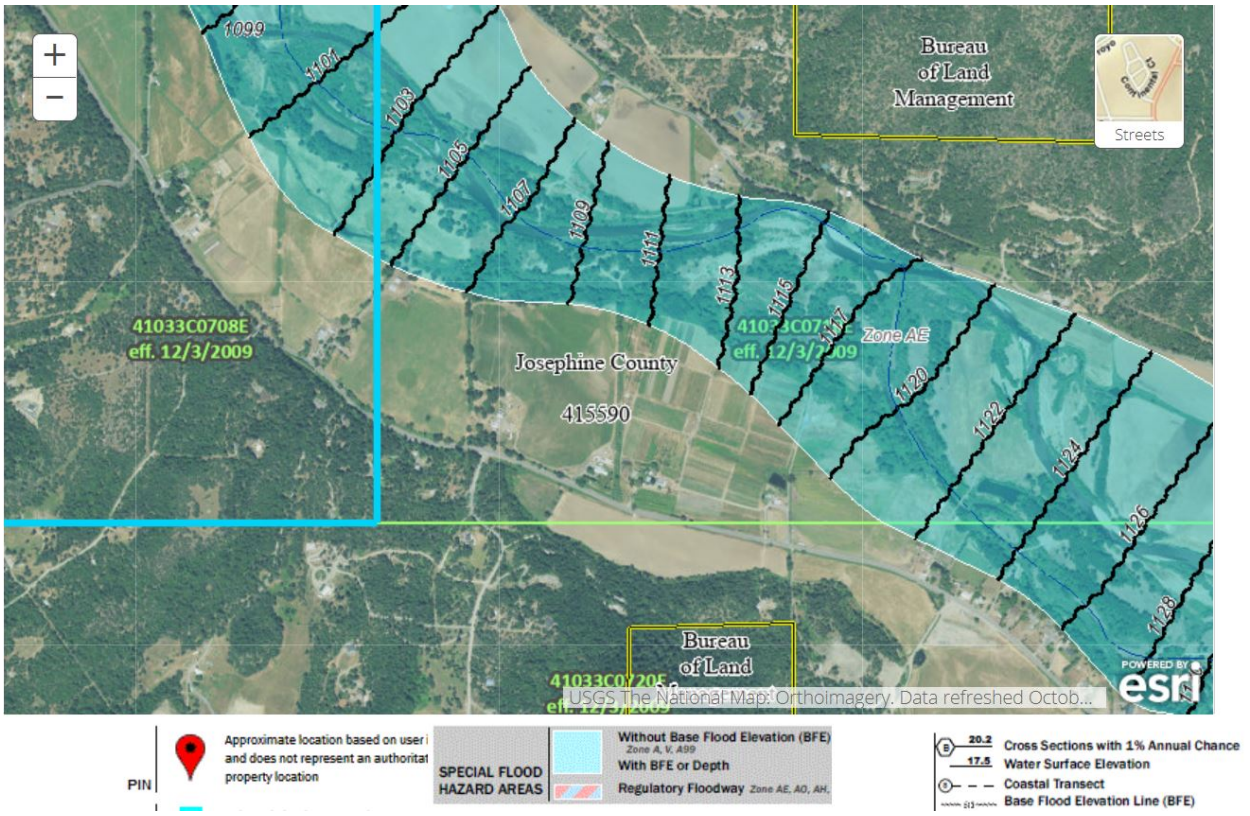
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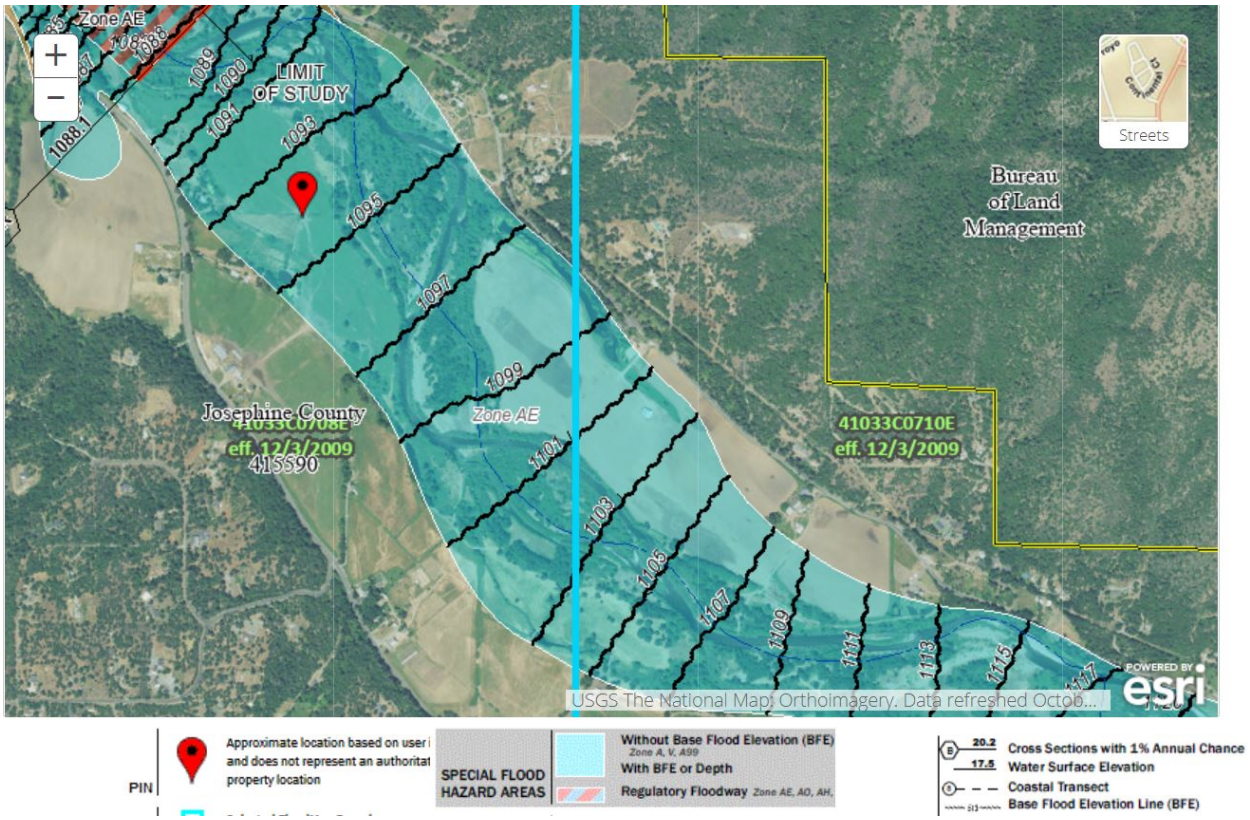
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Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)

The evidence is clear: Noble Dairy is sited in an SFHA. As discussed above, this means that Noble Dairy has a 4% chance of being hit with a 25-year flood within one year, a 34% chance within ten years, a 56% chance within twenty years, a 71% chance within thirty years, and an 87% chance within fifty years.[33] And these odds may actually be even higher, as wildfires driven by climate change are increasing the risk of flooding.[34]

When such a flood does occur, Noble Dairy's two large liquid manure impoundments (and any other manure storage facilities located in the production area)[35] will be inundated by the floodwaters of the Applegate River (and potentially Carris Creek). In addition, the cows who are confined in the buildings located in the production area will come into direct contact with the floodwaters of the Applegate River—and they may even drown.[36]

Therefore, Noble Dairy's AWMP does not—and cannot—comply with the terms and conditions of the General Permit.[37] Noble Dairy has failed to site and operate its waste storage facilities to contain all manure, process wastewater, stormwater runoff, and direct precipitation from a 25-year, 24-hour rainfall event.[38] It has also sited the majority of its disposal fields in a SFHA. Finally, Noble Dairy has failed to site and operate its production area such that it can prevent cows from coming into direct contact with the Applegate River (and potentially Carris Creek) during a flood.[39] No CAFO should be sited in an SFHA in the first place, but one that is already sited there should certainly not be allowed to expand. The Agencies should deny the proposed substantial changes to Noble Dairy's AWMP and require Noble Dairy to apply for an individual NPDES permit that can address and mitigate these unique—and significant—environmental risks.

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33 *See* Unit 3: NFIP Flood Studies and Maps, *supra* note 29, at 3-5).

34 FEMA, FLOOD AFTER FIRE FACT SHEET (Jan. 2012), https://www.ready.gov/sites/default/files/Flood_After_Fire_Fact_Sheet.pdf.

35 *See* AWMP, *supra* note 5, at 3.

36 The cows will not be saved and will still come into direct contact with the Applegate River even if they are out to pasture when a flood occurs—most of the disposal fields that are also used as pasture are also in SFHAs. AWMP, *supra* note 5, at 51.

37 *See supra* notes 20–23.

38 *See supra* notes 20–21.

39 *See supra* notes 22–23.

B. The Agencies should institute a moratorium on all new or expanding mega dairy CAFOs in Oregon.

Substantial evidence shows that mega dairy CAFOs constitute unjustifiable risks to the environment, public health, environmental justice communities, animal welfare, and rural communities. First, such CAFOs:

- Threaten Oregon's vulnerable water supply, with some CAFOs consuming as much water as a midsized city.
- Are significant sources of water pollution, impacting groundwater and surface water resources.
- Are significant sources of air pollution—including potent greenhouse gases like methane—that fuel climate change, undercut Oregon's efforts to improve ambient air quality, and threaten Oregon's iconic natural resources, such as the Columbia River Gorge.

Second, CAFOs harm public health by polluting water and air resources, breeding new viruses capable of generating pandemics, and contributing to the growth of antibiotic resistance. Third, CAFOs disproportionately harm Oregon's low-income and BIPOC communities. Fourth, CAFOs force sentient animals into intense confinement—where they are deprived of the opportunity to graze outdoors and are instead left to stand or lie all day in their own manure—without regard for their interests or well-being. Finally, CAFOs are putting Oregon's remaining small and mid-sized family farms out of business.

1. Environmental Effects

a. Water Consumption

CAFOs consume "a massive amount of water" for various operational purposes, such as flushing manure from barns, watering animals, and irrigating the crops upon which they rely for manure management.[40] "Because of this demand for water, CAFOs tend to seek sites above major aquifers," and "water is essentially treated as a free good after it is removed from the ground."[41] Lost Valley Farm used an estimated ten million gallons of water each day—in part by exploiting a permit loophole for "stockwatering" that allowed it to extract groundwater from an aquifer that had been closed to new withdrawals for decades—despite the fact that it

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[40] *See* WILLIAM J. WEIDA, CONCENTRATED ANIMAL FEEDING OPERATIONS AND THE ECONOMICS OF EFFICIENCY 22 (Mar. 19, 2000), https://www.sraproject.org/wp-content/uploads/2017/10/cafosandtheeconomicsofefficiency.pdf.

[41] *Id.* at 22.

reached only one third of its permitted size.[42] A water plan for the proposed Easterday mega dairy CAFO shows it would use approximately twenty million gallons of water per day.[43]

Oregon's rivers suffer from low flows and warming water, and its groundwater and surface water resources are overallocated.[44] There are twenty-two designated groundwater administrative areas in Oregon, including critical groundwater areas, groundwater limited/classified areas, and those areas withdrawn from appropriation.[45] CAFOs further burden these critical resources at the expense of Oregon's other water users, including homes, family farms, and wildlife.

b. Water Pollution

"Underlying all of the environmental problems associated with CAFOs is the fact that too much manure accumulates in restricted areas."[46] For example, a single dairy CAFO with one thousand cows produces as much waste as a city of 164,500 humans.[47] And larger CAFOs, such as the proposed Easterday mega dairy CAFO—

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[42] This estimate includes water used for irrigation and is based on water rights, number of acres, and applications for additional water rights. Without considering water used for irrigation, Lost Valley Farms used approximately one million gallons of water each day. Tracy Loew, *State officials let mega-dairy use loophole to tap endangered Oregon aquifer*, STATESMAN JOURNAL (Mar. 22, 2018), https://www.statesmanjournal.com/story/tech/science/environment/2018/03/22/lost-valley-mega-dairy-oregon-used-loophole-tap-aquifier-allowed-state-officials/426738002/.

[43] Water Description Use, Easterday Farms Dairy (Sep. 2020) (water plan produced by Oregon Water Resources Department in response to public records request) (Attach. 7).

[44] Nicole Montesano, *Agriculture use strains limited water resources*, YAMHILL VALLEY NEWS REGISTER (Aug. 21, 2015), https://newsregister.com/drying-times-agriculture-strains-water-resources.

[45] *Groundwater Administrative Areas / Critical Groundwater Areas*, OREGON.GOV, https://www.oregon.gov/OWRD/programs/GWWL/GW/Pages/AdminAreasAndCriticalGWAreas.aspx (last visited Sep. 7, 2021).

[46] EPA, *Risk Assessment Evaluation for Concentrated Animal Feeding Operations* 9 (May 2004) (finding that a dairy CAFO with one thousand cows produces the same amount of waste as a city of 164,500 humans).

[47] *Id.* at 2.

which seeks to confine 28,300 cows on the site of Lost Valley Farm[48]—would produce approximately seven times the waste of Portland, Oregon.[49]

Unlike cities, however, CAFOs typically rely on "traditional" manure management methods to store and dispose of manure, which "are not adequate to contend with the large volumes present at CAFOs."[50] The "age-old practice" of storing raw manure in holding lagoons and disposing of it by land application pollutes groundwater and surface water resources[51] via sprayfield runoff and lagoons that leak, seep, and catastrophically breach.[52]

Manure contaminants include nitrates—which threaten aquatic species—[53] and pathogens,[54] as well as ammonium, phosphate, dissolved solids, metals and metalloids, pharmaceutical chemicals, and natural and synthetic hormones.[55] Pathogens are parasites, bacteria, and viruses capable of causing disease or infection in animals or humans, and there are 150 different pathogens in manure capable of affecting human health.[56] Just six of these pathogens—*Campylobacter*, *Salmonella*, *Listeria*, *E. coli 0157:H7*, *Cryptosporidium*, and *Giardia*—account for 90% of food- and waterborne diseases.[57] Metals and metalloids include copper, zinc,

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48 George Plaven, *Groups oppose permit for Easterday Farms Dairy*, EAST OREGONIAN (Nov. 22, 2019), https://www.eastoregonian.com/news/local/groups-oppose-permit-for-easterday-farms-dairy/article_68bbe86b-e1bf-5e0b-a4c1-36dd53b6d3fe.html.

49 *See* World Population Review, *Portland, Oregon Population 2020*, http://worldpopulationreview.com/us-cities/portland-population/ (Oct. 29, 2019) (stating that Portland's population is 653,115).

50 EPA, *supra* note 46, at 2.

51 *See id.* at 1, 2.

52 *See id.* at 1; Steve Wing et al., *Environmental Injustice in North Carolina's Hog Industry*, 108 ENVTL. HEALTH PERSP. 225, 225 (2000).

53 *See* Elizabeth Royte, *The Simple River-Cleaning Tactics That Big Farms Ignore*, NATIONAL GEOGRAPHIC (Dec. 7, 2017), https://www.nationalgeographic.com/news/2017/12/iowa-agriculture-runoff-water-pollution-environment/.

54 Wing, *supra* note 52, at 225.

55 STEPHEN R. HUTCHINS ET AL., CASE STUDIES ON THE IMPACT OF CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOS) ON GROUND WATER QUALITY 7–8 (2012).

56 CARRIE HRIBAR, NAT'L ASSOC. OF LOCAL BDS. OF HEALTH, UNDERSTANDING CONCENTRATED ANIMAL FEEDING OPERATIONS AND THEIR IMPACTS ON COMMUNITIES 8–9 (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf.

57 D. LEE MILLER & GREGORY MUREN, CAFOS: WHAT WE DON'T KNOW IS HURTING US 8, https://www.nrdc.org/sites/default/files/cafos-dont-know-hurting-us-report.pdf (2019) (citing BROWN, VENCE & ASSOCIATES, TASK 2 REPORT: TITLE 27 EFFECTIVENESS TO PROTECT GROUNDWATER QUALITY 22, https://www.waterboards.

arsenic, nickel, and selenium.[58] Pharmaceutical chemicals include antibiotics, and hormones include estrogen.[59]

Despite the unjustifiable risks that CAFOs present to water quality, they are legion in Oregon. As a result, Oregon's groundwater and surface water resources—including drinking water sources—are polluted from CAFOs. Testing conducted in the 1990s found nearly a third (30%) of groundwater samples from monitoring wells exceeded the state trigger level.[60] Samples from areas dominated by CAFOs and agricultural fields where CAFO waste is applied were showing nitrate levels that reached and exceeded 70 mg/L[61]—seven times the 10 mg/L MCL for nitrate.[62] A 1996 study showed that 23% of the surveyed population were drinking private well water with nitrate concentrations over the 10 mg/L MCL.[63] Of the households with nitrate levels over the MCL, 72% were not taking measures to effectively remove the nitrates before human consumption.[64]

More recent figures suggest that the problem has only worsened. The Lower Umatilla Basin Ground Water Management Area Committee (LUBGWMA Committee) compiled the results of well sampling conducted in the region between 2015 and 2016 from a data set of 255 wells, and concluded that nearly half (48%) exceeded the 10 mg/L drinking water standard and nearly two thirds (60%) exceeded the 7 mg/L state trigger level.[65] In a separate survey examining just private domestic wells, the Committee found that 42% of the region's domestic wells contained nitrate levels exceeding the safe drinking water standard.[66]

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ca.gov/rwqcb5/water_issues/confined_animal_facilities/library/bva_final_task2_rpt_ess_ctns1_6.pdf (last visited Sep. 7, 2021)).

58 Hutchins et al., *supra* note 55, at 9.

59 *Id.* at 9–13.

60 GERALD H. GRONDIN ET AL., HYDROGEOLOGY, GROUNDWATER CHEMISTRY AND LAND USES IN THE LOWER UMATILLA BASIN GROUNDWATER MANAGEMENT AREA ES-1 & ES-5. At the time of these initial tests, the Oregon trigger level was set equal to EPA's MCL of 10 mg/L but has since been adjusted to the more protective standard of 7 mg/L. *Id.* at ES-2.

61 *Id.* at ES-6–ES-7.

62 40 C.F.R. § 141.11(d).

63 Thomas J. Mitchell & Anna K. Harding, *Who Is Drinking Nitrate in their Well Water? A Study Conducted in Rural Northeastern Oregon,* J. ENVTL. HEALTH 14, 14 (1996).

64 *Id.* at 18.

65 LOWER UMATILLA BASIN GROUNDWATER MANAGEMENT COMMITTEE, SECOND LOWER UMATILLA BASIN GROUNDWATER MANAGEMENT AREA LOCAL ACTION PLAN 34–5 (Jan. 9, 2019), https://lubgwma.org/wp-content/uploads/2020/02/Second-Action-Plan-Draft-For-Public-Comment.pdf.

66 *Id.* at 73.

c. Air Pollution and Climate Change

As the Oregon Dairy Air Quality Task Force has recognized, CAFOs produce a plethora of dangerous air emissions, including ammonia, nitrous oxide, nitrogen oxides, methane, volatile organic compounds, hydrogen sulfide, particulate matter (PM), and methanol.[67] These emissions diminish ambient air quality[68] and generate regional haze, which harms important natural resources of the state like the iconic Columbia River Gorge.[69] These emissions also spur climate change.[70]

A single CAFO is capable of emitting millions of pounds of ammonia each year.[71] CAFOs also produce nearly 75% of all ammonia air pollution in the United States.[72] Ammonia emissions are particularly high for CAFOs that rely on land application for manure management, which volatizes the ammonia in the manure and further increases emissions.[73]

2. Public Health Effects

a. Health Effects of Drinking Water Contaminated by CAFOs

Millions of people—including Oregonians—who live in CAFO-occupied communities are forced to rely on drinking water that has been "contaminated by

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[67] *See* OR. DAIRY AIR QUALITY TASK FORCE, FINAL REPORT TO THE DEP'T OF ENVIRONMENTAL QUALITY & DEP'T OF AG. 6 (July 1, 2008), http://library.state.or.us/repository/20; 12/201204101013082/.

[68] Hribar, *supra* note 56, at 7.

[69] MARK GREEN ET AL., THE COLUMBIA RIVER GORGE AIR QUALITY AND VISIBILITY STUDY 21 (2008) (results of study concluding that CAFO emissions are a significant source of haze in the Gorge).

[70] *See, e.g.*, R.M. Duren et al., *California's methane super-emitters*, 575 NATURE 180 (Nov. 7, 2019) (results of a study finding that California dairy CAFOs generate 26% of California's point-source methane emissions—more than the oil and gas sector); *see also* Xun Liao et al., *Large-scale regionalised LCA shows that plant-based fat spreads have a lower climate, land occupation and water scarcity impact than dairy butter*, INTERNATIONAL JOURNAL OF LIFE CYCLE ASSESSMENT (2020) (results of study finding that dairy butter is 3.5 times more damaging to the environment than alternatives).

[71] Michele M. Merkel, N.Y. State Bar Association presentation at Albany Law School: The Use of CERCLA to Address Agricultural Pollution 1 (Sept. 15, 2006), http://www.environmentalintegrity.org/pdf/publications/The_Use_Cercla.pdf.

[72] *CAFOs Ordered to Report Hazardous Pollution*, WATERKEEPER ALLIANCE (Apr. 11, 2017), http://waterkeeper.org/cafos-ordered-to-report-hazardous-pollution/.

[73] Hribar, *supra* note 56, at 5.

dangerous nitrates and coliform bacteria" from CAFOs.[74] Public water systems in such communities often have nitrate and coliform levels that exceed federal contaminant limits set by the Safe Drinking Water Act.[75]

The health impacts of drinking contaminated water are serious, particularly for those who have weakened immune systems.[76] Symptoms of illnesses caused by contaminated water include "nausea, vomiting, fever, diarrhea, muscle pain, death," and kidney failure.[77] People at high risk of illness or death constitute approximately 20% of the population, and they include elders, infants, children, and those who are pregnant, HIV positive, on chemotherapy, or are otherwise immunosuppressed.[78]

b. Health Effects of Breathing Air Polluted by CAFOs

CAFO emissions are so potent that it can be dangerous even to approach a waste lagoon—particularly in hot summer months.[79] "The oxygen-deficient, toxic, and/or explosive atmosphere which can develop in a manure pit has claimed many lives."[80] There are multiple incidents of workers approaching lagoons to make repairs and succumbing to the emissions, including one recent incident that claimed the lives of three brothers in Minnesota.[81] Some workers died from hydrogen sulfide poisoning, while others asphyxiated in the oxygen-starved air.[82] Others died after collapsing during rescue attempts.[83]

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74 Miller & Muren, *supra* note 57 (citing Jackie Wang, Nicole Tyau, & Chelsea Rae Ybanez, *Farming Activity Contaminates Water Despite Best Practices*, THE CALIFORNIAN (Aug. 15, 2017), https://www.thecalifornian.com/story/news/2017/08/15/water-near-farms-often-contaminated-nitrates-coliform-bacteria/571000001/); *see supra* section III.B.1.b.

75 Miller & Muren, *supra* note 57 (citing Wang et al., *supra* note 74; *Drinking Water Contaminants—Standards and Regulations*, EPA, https://www.epa.gov/dwstandardsregulations).

76 Hribar, *supra* note 56, at 9.

77 *Id.* at 10.

78 *Id.* at 9.

79 ROBBIN MARKS, CESSPOOLS OF SHAME: HOW FACTORY FARM LAGOONS AND SPRAYFIELDS THREATEN ENVIRONMENTAL AND PUBLIC HEALTH 1, 26 (July 2001), https://www.nrdc.org/sites/default/files/cesspools.pdf.

80 *NIOSH Warns: Manure Pits Continue to Claim Lives*, CENTERS FOR DISEASE CONTROL AND PREVENTION (July 6, 1993), https://www.cdc.gov/niosh/updates/93-114.html.

81 Graeme Massie, *Three brothers killed by manure pit fumes on family farm*, THE INDEPENDENT (Aug. 12, 2021), https://www.independent.co.uk/news/world/americas/manure-pit-fumes-kill-brothers-b1901689.html.

82 Marks, *supra* note 79, at 19.

83 *See id.* at 26.

But it is not necessary to be near a lagoon to suffer health effects from the emissions. Studies show that people in CAFO-occupied communities suffer disproportionate levels tension, anger, confusion, fatigue, depression, upper respiratory, and gastrointestinal ailments than neighbors of other types of farms and non-livestock areas."[84] Ammonia is a "strong respiratory irritant" that causes chemical burns to the respiratory tract, skin, and eyes.[85] It also causes severe coughing and chronic lung disease.[86] Hydrogen sulfide is acutely dangerous, causing "inflammation of the moist membranes" in the eyes and respiratory tract as well as olfactory neuron loss, pulmonary edema, and even death.[87] Particulate matter causes "chronic bronchitis, chronic respiratory symptoms, declines in lung function, [and] organic dust toxic syndrome."[88]

c. Novel Viruses

In addition to pathogen-driven illnesses, CAFOs also breed new viruses capable of generating pandemics. When the U.S. Centers for Disease Control and Prevention (CDC) sequenced the DNA of the swine flu that killed thousands of Americans in 2009, they traced its origin to a single North Carolina pig CAFO.[89] CDC estimates that the 2009 swine flu pandemic sickened 60.8 million Americans, hospitalized 274,304, and killed 12,469, including more than a thousand children.[90] Though both COVID-19 and SARS likely originated in live animal markets, they could have originated in CAFOs due to their similar conditions—and the next pandemic very well may.[91]

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84 Hribar, *supra* note 56, at 5; *see* Sarah C. Wilson, Comment, *Hogwash! Why Industrial Animal Agriculture is Not Beyond the Scope of Clean Air Act Regulation*, 24 PACE ENVTL. L. REV. 439, 441, 445 n.45 (2007).

85 CAFO SUBCOMM. OF THE MICH. DEP'T OF ENVTL. QUALITY TOXICS STEERING GRP., CONCENTRATED ANIMAL FEEDLOT OPERATIONS (CAFOS) CHEMICALS ASSOCIATED WITH AIR EMISSIONS 4 (May 10, 2006)

86 Hribar, *supra* note 56, at 6.

87 *Id.*; CAFO Subcomm., *supra* note 85, at 4.

88 Hribar, *supra* note 56, at 6.

89 Gavin J. D. Smith, et al., *Origins and Evolutionary Genomics of the 2009 Swine-origin H1N1 Influenza of Epidemic*, 459 NATURE 1122 (2009); Bernice Wuethrich, *Chasing the Fickle Swine Flu*, 299 SCIENCE 1502 (2003).

90 Sundar S. Shrestha et al., *Estimating the Burden of 2009 Pandemic Influenza of (H1N1) in the United States (April 2009–April 2010)*, 52 CLINICAL INFECTIOUS DISEASES S75–82 (2011).

91 ANIMAL LEGAL DEFENSE FUND, COVID-19 AND ANIMALS: RETHINKING OUR RELATIONSHIP WITH ANIMALS TO REDUCE THE LIKELIHOOD OF THE NEXT GLOBAL PANDEMIC 9, (June 2020), https://aldf.org/wp-content/uploads/2020/06/White-Paper-COVID-19-and-Animals.pdf ("A variety of factors contributed to the development and spread of COVID-19 and aggravate humanity's risk from further zoonotic

d. Antibiotic Resistance

Finally, there are often antibiotics in CAFO animal feed.[92] Seventy percent of all antibiotics used in the United States are administered to farmed animals as feed additives.[93] CDC has recommended that the use of antibiotics in "food animals" be "phased out."[94] These antibiotics are dangerous because "[t]he antibiotics often are not fully metabolized by animals[] and can be present in their manure. If manure pollutes a water supply, antibiotics can also leech into groundwater or surface water."[95] The risk to public health is high because this exposure causes antibiotics to be less effective for humans while also leading to the development of antibiotic-resistant microbes.[96]

3. Environmental Injustice

CAFOs are disproportionately sited in low-income and BIPOC communities.[97] This is because these communities have been denied "the political clout to

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diseases . . . . The common thread binding all risk factors, however, is our exploitation of both animals and the natural environment we share with them.")

92 Hribar, *supra* note 56, at 10; *Antibiotic Resistance Threats in the United States*, CENTERS FOR DISEASE CONTROL AND PREVENTION 11 (2013), https://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf#page=6; *see* Mary J. Gilchrist et al., *The Potential Role of Concentrated Animal Feeding Operations in Infectious Disease Epidemics and Antibiotic Resistance*, 115 ENVTL. HEALTH PERSPECTIVES 313, 313–14 (2006).

93 Hribar, *supra* note 56, at 10. *But see* Gilchrist et al., *supra* note 92, at 313 (noting that estimates suggest up to 87% of all antibiotic use in the United States is for livestock animals).

94 CDC, *supra* note 92, at 11.

95 Hribar, *supra* note 56, at 10.

96 *Id.* (citing Marc Kaufman, *Worries Rise Over Effect of Antibiotics in Animal Feed: Humans Seen Vulnerable to Drug-Resistant Germs*, WASH. POST, A01 (Mar. 17, 2000), http://www.washingtonpost.com/wp-srv/WPcap/2000-03/17/071r-031700-idx.html (explaining that eating the flesh of animals who have been fed antibiotics further increases one's risk of developing antibiotic resistance)).

97 *See* Jan. 12, 2017 EPA External Civil Rights Compliance Office Letter of Concern to N.C. Dep't of Envtl. Quality (describing discriminatory health and quality of life impacts from pig and poultry CAFOs), https://www.epa.gov/sites/production/files/2018-05/documents/letter_of_concern_to_william_g_ross_nc_deq_re_admin_complaint_11r-14-r4_.pdf; Kelley J. Donham et al., *Community Health and Socioeconomic Issues Surrounding Concentrated Animal Feeding Operations*, 115 ENVTL. HEALTH PERSP. 317 (2007); Wing, *supra* note 52, at 225.

successfully oppose their construction."[98] Accordingly, these communities disproportionately bear the consequences of the negative externalities of CAFOs,[99] including the public health harms discussed above,[100] diminished quality of life,[101] and plummeting property values.[102]

Rural communities already face significant health disparities when compared to urban communities, and CAFOs exacerbate those disparities.[103] Individuals suffering adverse health impacts from factory farms include not only members of BIPOC and low-income communities occupied by CAFOs, but also CAFO workers themselves, of whom a large number are undocumented and/or BIPOC.[104]

4. Animal Welfare

CAFOs keep sentient animals in conditions that betray Oregonian values. They "maximize profits by treating animals not as sentient creatures, but as production units. Raised by the thousands at a single location, animals are confined in such tight quarters that they can barely move, let alone behave normally."[105] Cows in dairy CAFOs often are "injected with the growth hormone that causes

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98 Miller & Muren, *supra* note 57 (citing Steve Wing & Jill Johnston, *Industrial Hog Operations in North Carolina Disproportionately Impact African-Americans, Hispanics and American Indians*, NC POLICY WATCH (2014), http://www.ncpolicywatch.com/wp-content/uploads/2014/09/UNC-Report.pdf; Wendee Nicole, *CAFOs and Environmental Justice: The Case of North Carolina*," 121 ENVIRON. HEALTH PERSPECT. 121 (2013): A182–A189, https://www.ncbi.nlm.nih.gov/pubmed/23732659).

99 *See id.*

100 *See supra* section III.B.2.

101 Hribar, *supra* note 56, at 7 –8 (noting odors and insect vectors that plague CAFO-occupied communities).

102 *Id.* at 11 (noting that "property value declines can range from a decrease of 6.6% within a 3-mile radius of a CAFO to an 88% decrease within 1/10 of a mile from a CAFO").

103 *See* Virginia Guidry et al., *Connecting Environmental Justice and Community Health*, 79 N.C. Med. J. 5, 324–28 (Sept. 10, 2018), https://www.ncmedicaljournal.com/content/79/5/324.full; *see also* Liz Essley Whyte & Chris Zubak-Skees, *Underlying Health Disparities Could Mean Coronavirus Hits Some Communities Harder*, NPR (Apr. 1, 2020), https://www.npr.org/sections/health-shots/2020/04/01/824874977/underlying-health-disparities-could-mean-coronavirus-hits-some-communities-harder.

104 *Factory Farm Workers*, FOOD EMPOWERMENT PROJECT, https://foodispower.org/factory-farm-workers/ (last visited Sep. 7, 2021).

105 *Inhumane Practices on Factory Farms*, ANIMAL WELFARE INSTITUTE, https://awionline.org/content/inhumane-practices-factory-farms (last visited Sep. 7, 2021).

lameness and mastitis, a painful udder infection."[106] Moreover, animals are forced into intense confinement—where they are deprived of the opportunity to graze outdoors and are instead left to stand or lie all day in their own manure—without regard for their interests or well-being.[107] The manure causes ammonia emissions to fill the confinement buildings, causing the animals to suffer painful skin, lung, and eye damage.[108]

5. Small and Mid-Sized Family Farms

The rise of CAFOs is driving small and mid-sized family farms—historically the backbone of Oregon's rural economy—to extinction. The "'catastrophic decline' in small and mid-sized dairy farms"[109] is one example: as a direct result of the rise of CAFOs in Oregon, the total number of dairy farms has fallen from 1,900 in 1992 to approximately 230 today.[110] In sum, Oregon's small and mid-sized family farms cannot—and will not—survive CAFOs.

IV. CONCLUSION

For the foregoing reasons—and to prevent another regulatory catastrophe like Lost Valley Farm—the Agencies should (1) deny the proposed substantial changes to Noble Dairy's AWMP and require Noble Dairy to apply for an individual NPDES permit that addresses and mitigates the unique environmental risks that this CAFO already presents, and (2) institute a moratorium on all new or expanding mega dairy CAFOs in Oregon.

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106 *Id.*

107 Lost Valley Farm, for example, confined cows to barns overflowing with manure. *See* Leah Douglas, *Lost Valley debacle leads to effort to limit mega-dairies in Oregon*, OREGON LIVE (Apr. 5, 2019), https://www.oregonlive.com/business/2019/04/lost-valley-debacle-leads-to-effort-to-limit-mega-dairies-in-oregon.html (featuring a photo of a dairy cow forced to stand in manure up to her ankles).

108 THE CRITICAL RELATIONSHIP BETWEEN FARM ANIMAL HEALTH AND WELFARE 7 (2018), ANIMAL WELFARE INSTITUTE, https://awionline.org/sites/default/files/uploads/documents/FA-AWI-Animal-Health-Welfare-Report-04022018.pdf.

109 George Plaven, *Groups call for "mega-dairy" moratorium*, CAPITAL PRESS (Dec. 13, 2018) https://www.capitalpress.com/ag_sectors/dairy/groups-call-for-mega-dairy-moratorium/article_a7a01e2a-fcb5-11e8-bc5c-1f802a55fc28.html.

110 Douglas, *supra* note 107.

Sincerely,

Christine Ball-Blakely
Staff Attorney
ANIMAL LEGAL DEFENSE FUND
cblakely@aldf.org

On behalf of:

STAND UP TO FACTORY FARMS

Attach. 1

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

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 Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Oregon State Plane South Zone (FIPS zone 3602). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM 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 this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. 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 http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Josephine County and the State of Oregon. This information was compiled from Josephine County (2008), Oregon Water Resources Department (2006), OR/WA Bureau of Land Management (2000), U.S. Fish and Wildlife Service (2008), Oregon Parks and Recreation Department (2008), and National Geodetic Survey (2007) at a scale of 1:24,000.

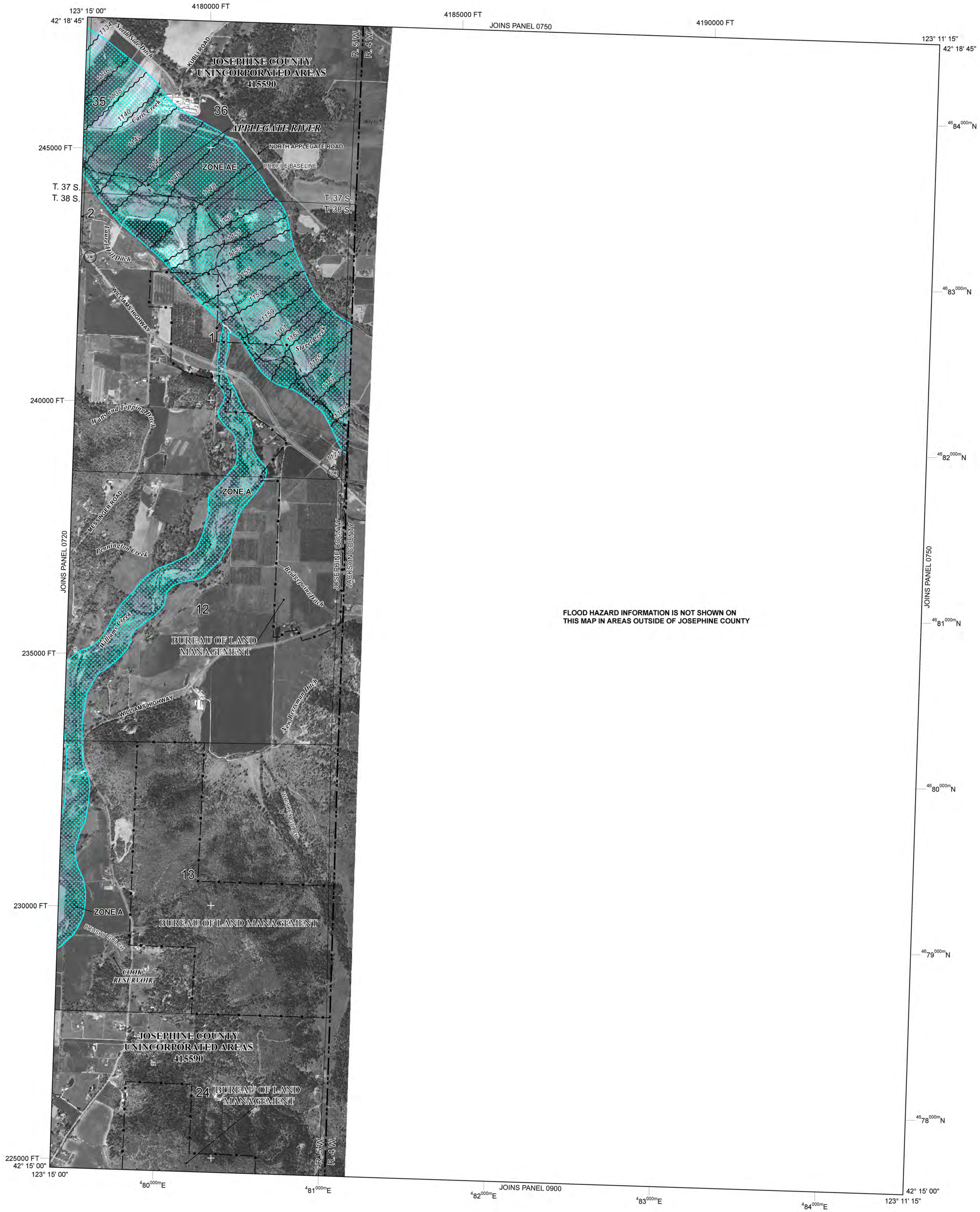
The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this 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 this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas 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	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A —— A	Cross section line
23 - - - - - 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: Oregon State Plane South Zone (FIPS Zone 3602), Lambert Conformal Conic projection
4989000m N	1000-meter Universal Transverse Mercator grid values, zone 10N
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
DECEMBER 3, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0740E

FIRM

FLOOD INSURANCE RATE MAP

JOSEPHINE COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 740 OF 1175

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JOSEPHINE COUNTY	415590	0740	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41033C0740E

EFFECTIVE DATE
DECEMBER 3, 2009

Federal Emergency Management Agency

Attach. 2

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole- foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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 Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM 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 this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. 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 http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Jackson County GIS Services, State of Oregon OLCD, and the National Geodetic Survey. This information was compiled at various map scales during the time period 2003-2006.

This 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 *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

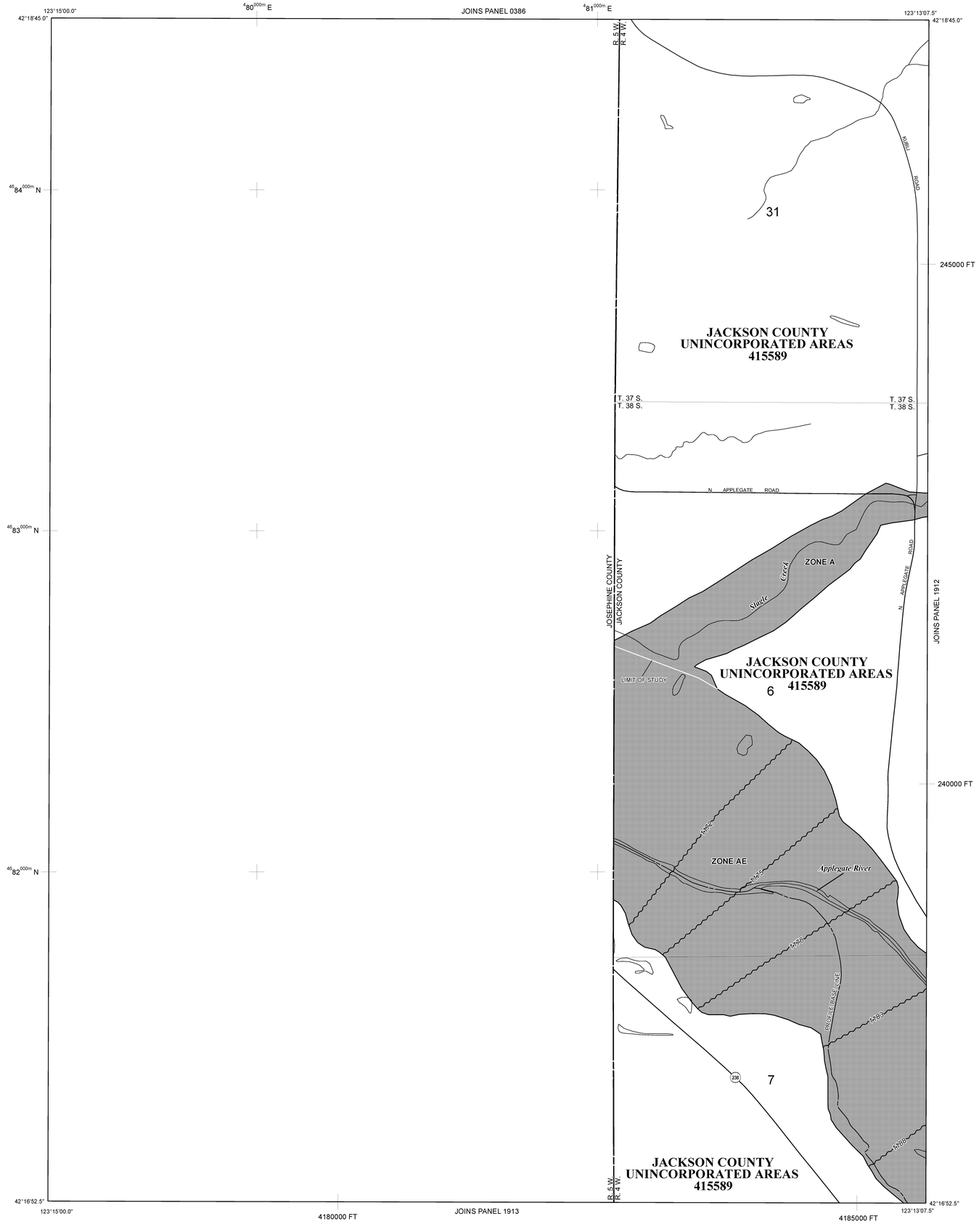
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de- annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Information eXchange** at **1-877-FEMA MAP** (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and /or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area 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 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 10
- 6000000 FT — 5000-foot grid ticks: Oregon State Plane coordinate system, south zone (FIPSZONE 3602), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
May 3, 2011
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1911F

FIRM
FLOOD INSURANCE RATE MAP

JACKSON COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 1911 OF 2327
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JACKSON COUNTY	415589	1911	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41029C1911F

EFFECTIVE DATE
MAY 3, 2011

Federal Emergency Management Agency

Attach. 3

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole- foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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 Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM 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 this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. 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 http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Jackson County GIS Services, State of Oregon OLCD, and the National Geodetic Survey. This information was compiled at various map scales during the time period 2003-2006.

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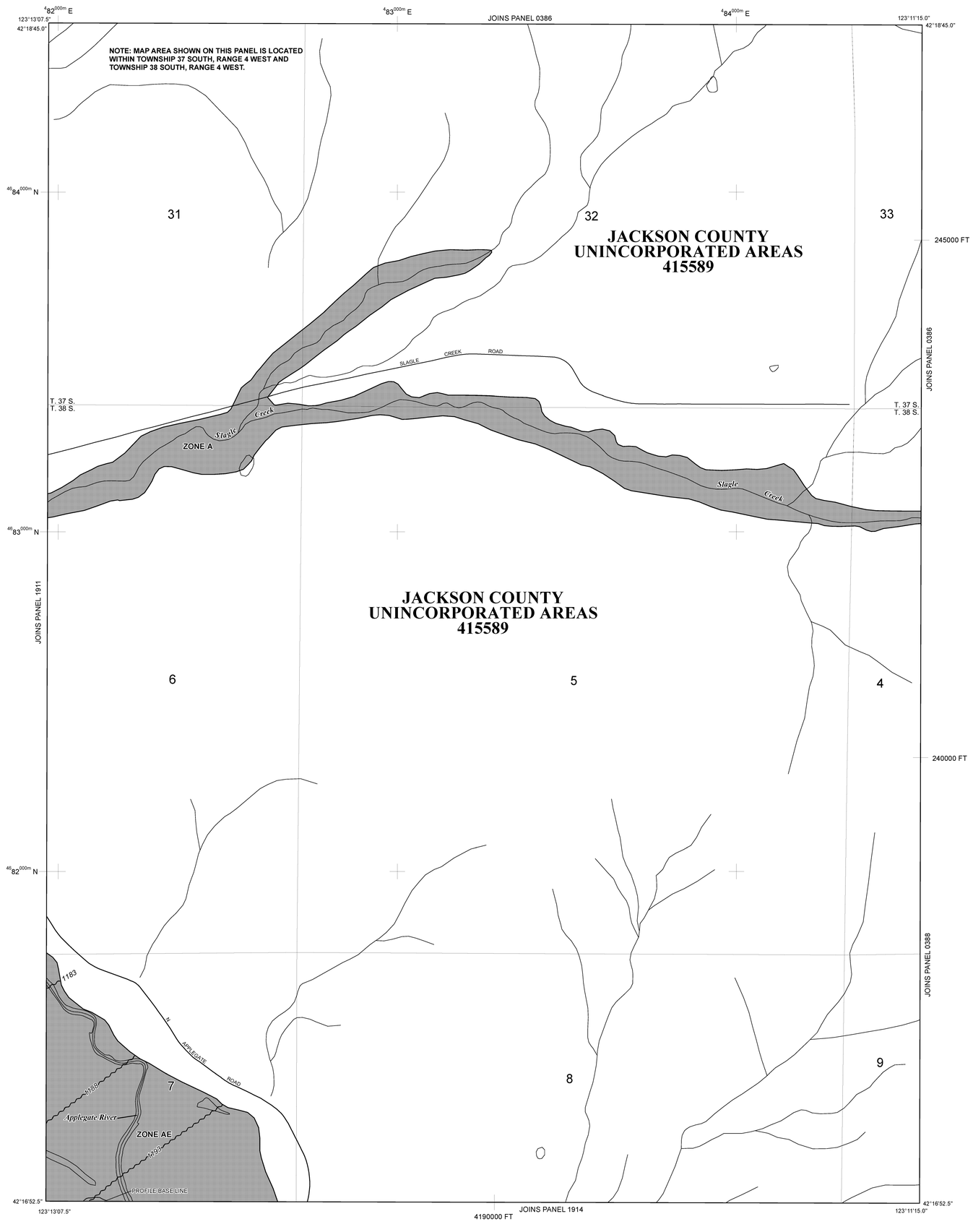
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area 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 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 10
- 6000000 FT — 5000-foot grid ticks: Oregon State Plane coordinate system, south zone (FIPSZONE 3602), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
May 3, 2011
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1912F

FIRM
FLOOD INSURANCE RATE MAP
JACKSON COUNTY, OREGON
AND INCORPORATED AREAS

PANEL 1912 OF 2327
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JACKSON COUNTY	415589	1912	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41029C1912F

EFFECTIVE DATE
MAY 3, 2011

Federal Emergency Management Agency

Attach. 4

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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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 Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Oregon State Plane South Zone (FIPS zone 3602). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM 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 this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. 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 http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Josephine County and the State of Oregon. This information was compiled from Josephine County (2008), Oregon Water Resources Department (2006), OR/WA Bureau of Land Management (2000), U.S. Fish and Wildlife Service (2008), Oregon Parks and Recreation Department (2008), and National Geodetic Survey (2007) at a scale of 1:24,000.

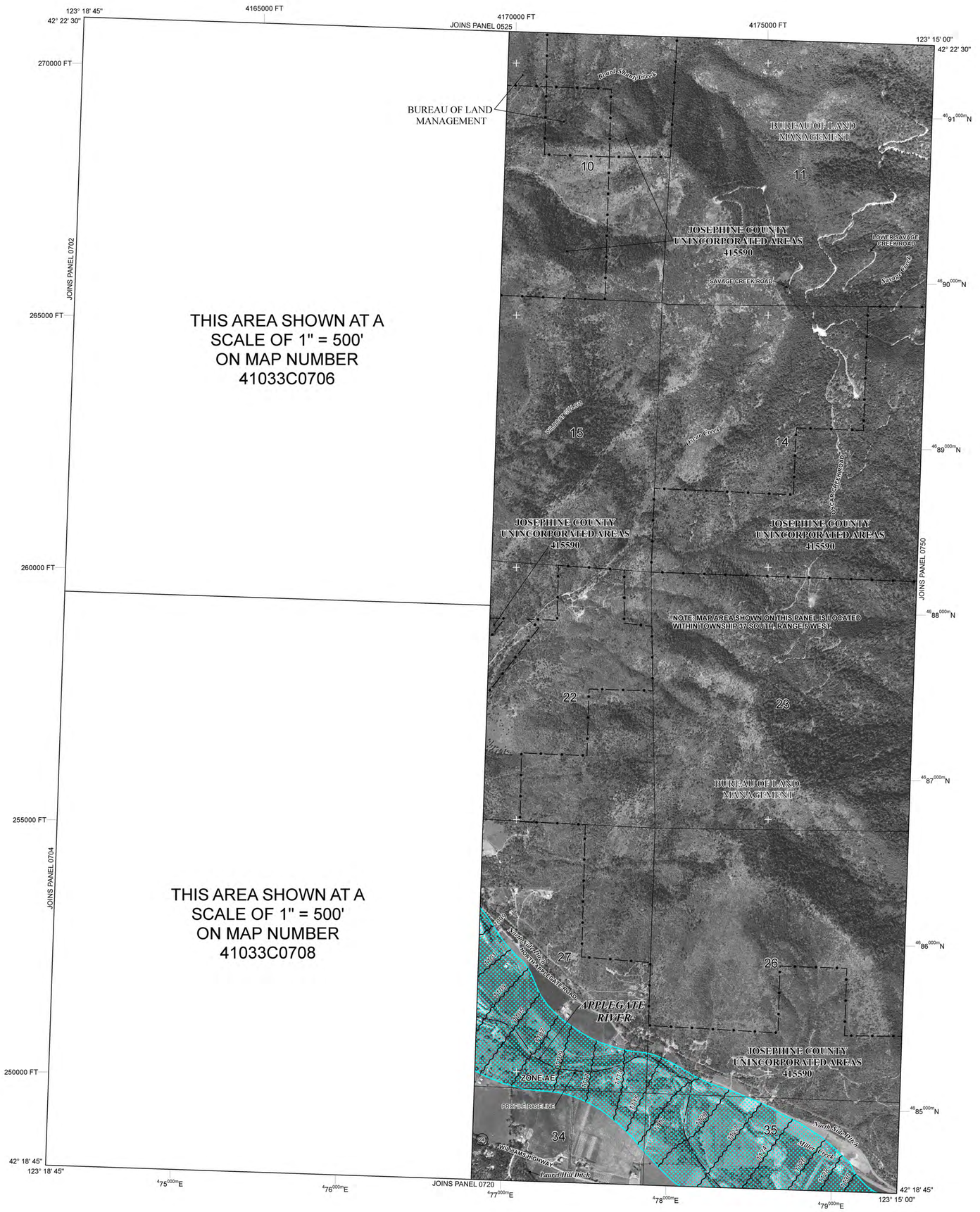
The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this 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 this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas 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	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% Annual Chance Floodplain Boundary
	0.2% Annual Chance Floodplain Boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: Oregon State Plane South Zone (FIPS Zone 3602), Lambert Conformal Conic projection
4589000mN	1000-meter Universal Transverse Mercator grid values, zone 10N
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 3, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0710E

FIRM

FLOOD INSURANCE RATE MAP

JOSEPHINE COUNTY, OREGON AND INCORPORATED AREAS

PANEL 710 OF 1175
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JOSEPHINE COUNTY	415590	0710	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41033C0710E
EFFECTIVE DATE
DECEMBER 3, 2009

Federal Emergency Management Agency

Attach. 5

NOTES TO USERS

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas 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	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% Annual Chance Floodplain Boundary
	0.2% Annual Chance Floodplain Boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: Oregon State Plane South Zone (FIPS Zone 3602), Lambert Conformal Conic projection
4689000mN	1000-meter Universal Transverse Mercator grid values, zone 10N
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
DECEMBER 3, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0720E

FIRM

FLOOD INSURANCE RATE MAP

JOSEPHINE COUNTY, OREGON AND INCORPORATED AREAS

PANEL 720 OF 1175
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JOSEPHINE COUNTY	415590	0720	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
41033C0720E
EFFECTIVE DATE
DECEMBER 3, 2009

Federal Emergency Management Agency

Attach. 6

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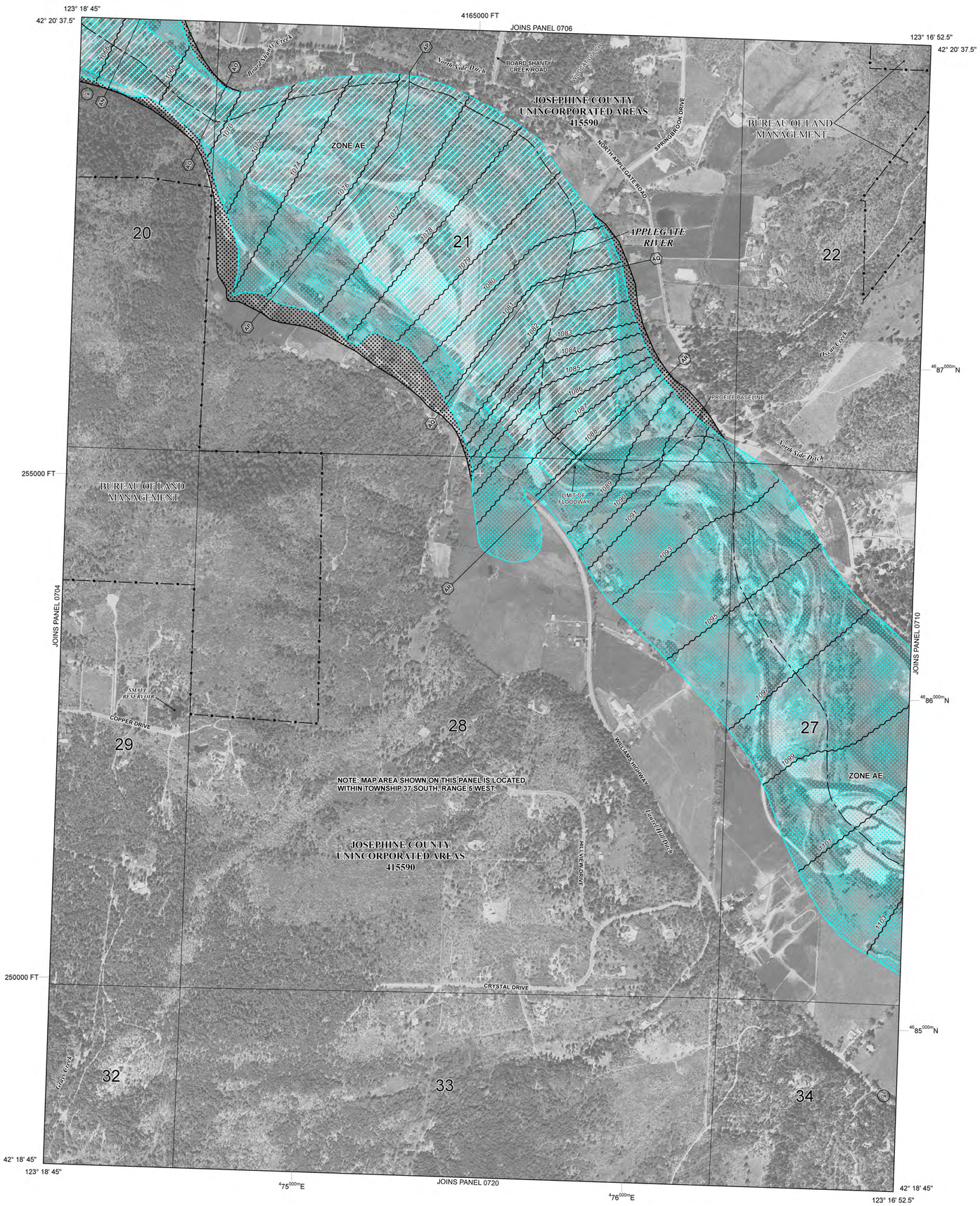

LEGEND

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NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0708E

FIRM

FLOOD INSURANCE RATE MAP

JOSEPHINE COUNTY, OREGON AND INCORPORATED AREAS

PANEL 708 OF 1175
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
JOSEPHINE COUNTY	415590	0708	E

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MAP NUMBER
41033C0708E
EFFECTIVE DATE
DECEMBER 3, 2009

Federal Emergency Management Agency

Attach. 7

Water Description Use
Easterday Farms Dairy

Description	Average Daily Gallons	Average Daily CFS	Annual Acre Feet	Source	Approval/Contract Required
Domestic Use for human consumption and sanitation - both employees and owners/operators	4850	0.0075	5.43	1) Port of Morrow 2)Ground Water/Surface Water use transfer	1)Current LOI & future contract POM 2) ODWR Transfer Approval
Watering Livestock	336,400	0.5205	376.64	1) Port of Morrow 2)Ground Water/Surface Water use transfer	1)Current LOI & future contract POM 2) ODWR Transfer Approval
Water for the milding system, cleanup, and maintenance	46,500	0.0719	52.06	1) Port of Morrow 2)Ground Water/Surface Water use transfer	1)Current LOI & future contract POM 2) ODWR Transfer Approval
Water for air misting	35,000	0.0541	39.19	1) Port of Morrow 2)Ground Water/Surface Water use transfer	1)Current LOI & future contract POM 2) ODWR Transfer Approval
Other Water use for milk/dairy production	40,000	0.0618	44.79	1) Port of Morrow 2)Ground Water/Surface Water use transfer	1)Current LOI & future contract POM 2) ODWR Transfer Approval
Water used in flushing system for cleaning livestock holding areas	360,000	0.557	403.07	1) Port of Morrow 2)Ground Water/Surface Water use transfer	1)Current LOI & future contract POM 2) ODWR Transfer Approval
Totals	822,750	1.2728	921.18		
Water for dilution of wastewater for application at agronomic rates	N/A				
Crop Production 5333 Acres		84.96	23998	CID	Certificates 80062, 83517, 86856, 86857, 86992, 86993