From: Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov>

Sent: Monday, April 8, 2019 4:23 PM **To:** Evan Sawyer - NOAA Federal

Subject: Re: [EXTERNAL] Another WUA question for you

Ya, that is one way of looking at it. I would think more flow may be required shallower spawning habitat created by the gravel, or the side channels for rearing habitat. I guess they were designed for the lowest flow for connectivity?

Sarah Gallagher | Fish Biologist

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916-930-3712 | Sarah.Gallagher@noaa.gov

On Mon, Apr 8, 2019 at 4:18 PM Evan Sawyer - NOAA Federal <<u>evan.sawyer@noaa.gov</u>> wrote: Wow, thanks for checking

Kinda calls into question the reliance on habitat restoration as a mitigation measure?

On Mon, Apr 8, 2019 at 4:16 PM Sarah Gallagher - NOAA Federal < sarah.gallagher@noaa.gov > wrote:

----- Forwarded message -----

From: Mark Gard < mark_gard@fws.gov >

Date: Mon, Apr 8, 2019 at 4:14 PM

Subject: Re: [EXTERNAL] Another WUA question for you

To: Sarah Gallagher - NOAA Federal < <u>sarah.gallagher@noaa.gov</u> > Cc: < mike.urkov@gmail.com > , < mtompkins@flowwest.com >

No - could probably do it on area of gravel added times average combined suitability. I would be surprised if habitat is limiting for anything but fall-run though.

Sent from my iPhone

On Apr 8, 2019, at 4:05 PM, Sarah Gallagher - NOAA Federal < sarah.gallagher@noaa.gov > wrote:

Hi again Mark,

Have you ever updated the WUA curves for the upper Sacramento River since all of the Restoration and gravel additions? If not, how would restoration factor in?

Thanks again for your help.

$Sarah\ Gallagher\ |\ Fish\ Biologist$

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Evan Bing Sawyer,

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