UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No:
WCRO-2019-00733

December 18, 2020

Daniel M. Mathis
Federal Highway Administration
Suite 501 Evergreen Plaza
711 South Capital Way
Olympia, Washington 98501-1284

Re: Endangered Species Act Section 7 Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Stewart Road Bridge Replacement on the White River (HUC 171100140404), Pierce County, Washington

Dear Mr. Mathis:

This letter responds to your February 1st, 2019, request for initiation of consultation with the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) on the effects of the U.S. Federal Highway Administration funding and administration of the Stewart Road Bridge Replacement.

Your request qualified for our expedited review and analysis because it met our screening criteria and contained all required information on, and analysis of, your proposed action and its potential effects to listed species and designated critical habitat.

We reviewed the FHWA's consultation request and related initiation package, including a Biological Assessment (BA), which is available on file at the NMFS Oregon Washington Coastal Office in Portland, Oregon. Where relevant, we adopted the information and analyses provided in the BA, but only after our independent, science-based evaluation confirmed they meet our regulatory and scientific standards. We adopt by reference here the following sections of the BA:

- Section 2 (Project Description) for the description of the proposed action, including the existing site conditions;
- Section 3 (Impact Avoidance and Minimization measures);
- Section 4 (Action Area);
- Section 5 (Species and Habitat Information) for the status of species and critical habitat;
- Section 6 (Environmental Setting/Baseline) for the description of the environmental settings within the action area;
- Section 7 (Analysis of Effects) for the effects of the action; and,
- Section 8 (Conclusions and Effect Determinations)
- References

We also supplement the analysis of effects with relevant information identified during our review. On June 17th, 2020, NMFS and the FHWA met via teleconference to discuss the proposed action and the formal consultation. On July 21st, NMFS and the FHWA agreed on a new Biological Opinion delivery date of October 30, 2020. On October 27, 2020 additional information specifying the stormwater treatment was provided by the Washington State Department of Transportation.

The FHWA is proposing to fund the replacement of a functionally obsolete bridge that crosses the White River at river mile (RM) 4.9. Project activities include removal of the existing two-lane bridge and replacement with a four-lane structure including bike and pedestrian facilities. Specific work activities include removal of the existing bridge, construction of temporary work platforms, installation of drilled shafts, construction of the bridge superstructure and walls, paving, marking, signing, illumination, and utility relocation. Construction activities are anticipated to start in August, 2020 and the project duration is anticipated to be 48 months.

"Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The project would require the driving of up to 110 24" diameter steel piles for temporary work platform construction, of which 102 may be driven waterward of the OHWM of the White River. It is anticipated that all piles will require impact pile driving to achieve sufficient depth of 100+ feet due to the dense alluvium between 20 and 60 feet in elevation throughout the bridge replacement project area (Kimmerling 2015). The impact driving noise is anticipated to attenuate to below background levels within 0.46 miles from the proposed bridge. However, due to the use of a bubble curtain, limiting pile driving to 3 piles per day, and the sinuosity of the river and the dampening effect the shoreline will have on any sound waves, the area of effect is 858 meters or 0.53 miles of the proposed bridge (BA Appendix E-4).

The existing outfall above the OHWM of the White River on the north side of the bridge will be replaced and improved by adding cobble for erosion protection.

Stormwater will be treated in a linear modular wetland system (LMWS) on both sides of the White River. Each linear modular wetland system is an approximately 4-foot by 13-foot concrete vault with biofiltration material which provides enhanced treatment. One will be installed for each basin, east and west of the river (see Attachment 1). The replaced outfall on the west side of the river, north of the bridge will be via a dispersion trench just upslope of a riverine wetland. This dispersion trench and vegetation between this outfall and the wetted channel of the White River will attenuate runoff velocities and improve water quality compared to the existing outfall ditch that flows directly into the river. The new outfall on the east side of the river, south of the bridge will utilize a pond to attenuate runoff velocities and improve water quality. It will be designed under the specifications of the most current Stormwater Management Manual for Western Washington (SWMMWW). The proposed stormwater outfall pads will utilize river rock or gabion to avoid river substrate erosion and will each impact a 16-foot by 12-foot area below the OHWM approximately 50 feet upstream and 100 feet downstream of the bridge.

Because the project will include stormwater discharges from the increased impervious area of the new bridge, we expand the action area beyond the point that it merges with the Puyallup River. Although the project includes measures to treat stormwater where treatment is currently not occurring, no method of treatment other than full infiltration will remove all contaminants. Stormwater discharges will be a chronic source of episodic pollutants that will result in a slight increase of pollutant loading. The proposed action assumes that treatment will ensure that regulated components dilute to background levels consistently with state water quality criteria, however stormwater discharge from roadways are known to contain multiple contaminants that are not currently regulated. These pollutants will continue to disperse into the Puyallup River, and Puget Sound, for the life of the roadway. For this reason we expand the action area relative to aquatic areas beyond that identified in the BA; the furthest extent of the action area is where the Puyallup River enters Puget Sound.

Puget Sound Chinook and Puget Sound Steelhead occur in the action area (BA, Table 1). These species are likely to be exposed to and adversely affected by effects of the proposed action (BA, section 7) that will include long and short-term n water quality impairments from stormwater discharges from the expanded area of impervious surface, and increased suspended sediments, and short-term hydroacoustic impacts from pile driving (BA, Section 7). Our information confirms the presence of those species in the action area, and that the proposed action is likely to adversely affect them as described.

Each of the affected species also has designated critical habitat in the action area (BA, Table 1) and, according to the BA (pp 70-71), those critical habitats are likely to be adversely affected by the proposed action's short and long term changes on habitat features that are also considered physical and biological features (PBFs) of critical habitat. The effects of an action on species or critical habitat often depend on the duration of those effects, but even a short-term event whose effects are relaxed almost immediately (i.e., pulse effect) can still be adverse, provided those effects are reasonably likely to occur, and can be meaningfully measured, detected, or evaluated. In this case, we expect to be able to measure the effects of the action as physical changes in water quality and underwater sound that will be sufficient to reduce the capability of designated critical habitat to meet the biological requirements of listed species. Thus, our information confirms the presence of critical habitat in the action area and we conclude that the effects of the proposed action are likely to adversely affect critical habitat, even if some of those effects may be unlikely to bring about a long term or permanent modification of those critical habitats.

We used information in the BA Sections 4, 5, and 6 to examine the status of each species and the condition of critical habitat throughout the designated area, as described in 50 CFR 402.02, including the function of the physical or biological features (PBFs) essential to the conservation of the species that create the conservation value of that habitat. We also considered information in the UWR Conservation and Recovery Plan for Chinook salmon and steelhead (NMFS 2011) describing the presence, abundance, density or periodic occurrence of listed species and the condition and location of the species' habitat, including critical habitat (50 CFR 402.14(c)(1)(iii)).

We used information in BA Section 6 to examine the "environmental baseline," including the past and present impacts of all Federal, State, or private actions and other human activities in the

action area, the anticipated impacts of all proposed Federal actions in the action area that have already undergone formal or early ESA Section 7 consultations, and the impact of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02). The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are also part of the environmental baseline

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

Sections 7 and 8 of the BA provide a detailed discussion and comprehensive assessment of the effects of the proposed action, and are adopted here pursuant to 50 CFR 402.14(h)(3)(i). NMFS evaluated these Sections of the BA and after our independent, science-based evaluation determined that it meets our regulatory and scientific standards.

Critical Habitat Effects:

There will be excavation and fill below the OHWM of the White River for removal of the existing in-water bridge piers. A total of 192 square feet of migration habitat will be lost for the construction of an outfall pad for the stormwater discharge point. Migration is a conservation role in critical habitat in the action area. The destruction of 192 square feet of migration habitat is unlikely to appreciable reduce the migration or rearing role of this designated area because the footprint is very limited.

Only 5,250 strikes (anticipated to be 3 piles) will be conducted during any one day, to preserve the migration corridor without sound disturbance for a portion of the day, each day during construction. The sound disturbance of aquatic habitat in the migration corridor will be distributed over a period of 36 days across three work windows. Migration is a conservation role in the critical habitat of the action area. Limiting pile driving to 3 piles per day should not cause a significant disruption to migration values.

Approximately 300 linear feet of critical habitat downstream of the project area in the White River may be affected by elevated turbidity during in-water project construction. Unregulated toxins from Pollution Generating Impervious Surface (PGIS) will affect water quality, despite treatment, throughout the action area, with decreasing acuteness from the point of discharge, to the Puget Sound Water quality is a PBF of freshwater rearing and migration values of both of both PS steelhead and PS Chinook salmon critical habitats. The brief introduction of suspended sediments during construction will only briefly diminish water quality, and the prompt (hours to days) return to baseline levels of turbidity indicates the water quality will retain its conservation value for rearing and migration relative to this impairment. When we consider the stormwater runoff associated with the increased PGIS, there are thousands of distinct contaminants in urban runoff (Du et al 2017and Feist et al 2017, cited in McIntyre et al, 2018) that cause a range of

sublethal effects in fish (e.g., embryonic developmental defects, cardiovascular abnormalities, and reduced growth) and stream macroinvertebrates (Peter et al. 2018). Case studies of the efficacy of runoff treatment using a 'pocket wetland' found that pocket wetland systems can be relied upon for minimizing heavy metals such as chromium, cobalt, zinc, arsenic, cadmium, and lead (Cr, Co, Zn, As, Cd and Pb) and critical pollutants such as total phosphorus (TP) and total suspended solids (TSS) caused by highway runoff (Senduran et al. 2018; Krompart et al 2018). Removal of pollutants in treatment wetlands is limited by the form and concentration of the constituents, water flow rates and residence time, the presence of oxygen, substrate type and the entire chemical makeup of the water to be treated (Amacha et al 2017). The project's use here is not of a wetland for treatment prior to discharge into the White River, but of a vault system called a "linear modular wetland" with biofiltration material. This design has been approved by the Washington State Department of Ecology, and is expected to reduce many contaminants, though the relative efficacy compared to a daylighted wetland is unclear/not provided. Despite the application of treatment using this system, not all contaminants will be prevented from entering critical habitat, and fish will be exposed to the contaminant load/diminished water quality in both the White and the Puyallup Rivers. Current science on urban runoff mortality syndrome also indicates that contaminant load of stormwater remains detrimental irrespective of the antecedent dry period, revising the concept of "first flush." Total rainfall depth is and maximum intensity are more important factors in load, with rain duration, runoff depth, runoff peak and average intensity were the next four most important variables. Antecedent dry period and effective impervious area fraction had relatively low ranking of factors contributing to load (Perera et al 2019).

The project will involve clearing of 26 mature trees below the OHWM within the floodplain of the White River. The project will involve temporary clearing of 0.94 acres of vegetation and 0.18 acres of permanent clearing above the OHWM within the 100-foot RMZ of the White River. Vegetative riparian cover is a PBF for freshwater rearing and migration values of both PS steelhead and PS Chinook salmon critical habitats.

Up to 0.9 acres of steelhead spawning habitat will be inaccessible to fish during work platform pile driving, pier demolition, and pier construction in each construction season.

The project will also have a long term beneficial impact on critical habitat through the reduction of the total amount of in water material and obstructions (piles) and restoring of natural sediment transport through the action area.

Species Effects:

Puget Sound Chinook and Puget Sound Steelhead are likely to be adversely affected by the proposed action, as discussed in Section 8 of the BA. Typically, adult and juvenile Chinook salmon and steelhead are present during the in-water work window from July 15‑September 15 (BA Table 4). However, Spring Chinook enter the Puyallup River from May through mid-September, and spawn from mid-September through October, and rear for up to one year. In contrast to other spring stocks in Puget Sound, White River Chinook smolts emigrate primarily as subyearlings (NWFSC 2015). White River Fall Chinook are also present year round, with returning adults June-October, spawning, September through October, incubation September into March, and outmigration March through August. White River Winter PS steelhead are also

present year round as freshwater rearing can last 1-2 years. Individuals of these populations will be exposed to all effects of the proposed action. Individuals from the Puyallup/Carbon Winter Run Steelhead and Puyallup River Fall Chinook populations will be exposed to the water quality diminishment from highway runoff at low levels, despite the addition of treatment.

The effects of pile driving will be temporary and will not impact more than two cohorts of the affected populations. Pile driving will be limited to 5,250 strikes per day (anticipated to be 3 piles) and a bubble curtain will be employed. For this reason fish may incur physical injury only within 251 meters or 823.5 feet of the pile driving. If three strikes occur with the bubble curtain turned off for hydroacoustic monitoring purposes, fish may be disturbed up to 3,981 meters or 2.47 miles from the proposed bridge.

As detailed in section 7 of the BA there will be temporary and permanent effects including; temporary habitat loss, temporary water quality reduction, temporary reduction in overwater vegetation. The temporary loss of potential salmonid habitat will be approximately 192 square feet during the period of in-water work for the outfall pad. There will be a permanent gain of habitat as rounded river cobbles will be imported as scour protection for the outfall (BA Figure 7), and the number of in-water piers will be reduced from two to one.

Short-term impacts to water quality may occur in the form of increased sedimentation and turbidity during construction. Within the White River, sedimentation and turbidity may impact wildlife by reducing in-water visibility, clogging fish's gills if there is extended exposure, and disturbing aquatic flora and fauna. However, fish will be excluded from the in-water work area prior to in-water work and site isolation structures will be constructed that will isolate the work area from the remainder of the White River. There will be a moderate term duration reduction in overwater vegetation as shrubs and trees are cleared to allow access. This will result in a several year duration reduction in shade, wood recruitment, and leaf litter input, and habitat structure for arthropod prey. A 'moderate term' impact on the temperature in the White River – already identified as having temperature concerns – will result from the removal of the 26 mature trees below the OHWM. Loss of cover will be eventually ameliorated by the revegetation of the site with native riparian trees and shrubs as well as the widening of the proposed bridge. Overwater vegetation should return within 1 year and canopy/shade should begin to reestablish in 10-15 years, depending on species planted.

Effects of stormwater to species – Field testing data per Ecology's approval documents show the proposed treatment design provided 75% of runoff treated over the testing period, removing 85% of TSS; 65% Total Phosphorus; 60% zinc; 32% of copper. When the increased amount of PGIS is factored, water quality of effluent is likely to improve over pre-project conditions for all of the identified parameters except copper, which will decline. The change in non-regulated constituents are not documented by the proponent or any other party, so for the purpose of this exposure and response analysis, we will assume 50% efficacy in removal, together with the 100% increase in PGIS, creating an estimated increase of these unregulated constituents, including an increase in copper, expressed as a decline in water quality of roughly 25%.

A study of stormwater samples to identify contaminants of emerging concern in Minnesota found 123 compounds (commercial-consumer compounds, veterinary and human pharmaceuticals, lifestyle and personal care compounds, pesticides, etc.) though treatment did

provide significant removal of most of these compounds (Fairburn et al 2018). Exposure to urban stormwater with its array of regulated and unregulated contaminants produces a range of responses among salmonids, some of which appear species specific (McIntyre et al 2018). Coho salmon show the most extreme response, displaying up to 100% mortality within several hours of exposure, at any lifestage. Chum salmon show the least response, with no mortality and blood chemistry similar to un-exposed individuals (McIntyre et al 2018). PS Chinook and PS steelhead exposure and response are not widely studied, but assumptions are that life history differences such as upstream spawning locations outside of urban areas and brief freshwater rearing help to minimize exposure of Chinook (McIntyre et al 2018), while juvenile steelhead are more likely exposed due to their long freshwater rearing behaviors. Pre-spawn mortality may also be influenced by run timing, e.g., spring and summer Chinook salmon, as well as some sockeye and coho salmon, enter freshwater several months prior to spawning so these populations are susceptible to energetic depletion and environmental stressors such as poor water quality, high water temperatures, and disease expression during their extended holding period, whereas many fall Chinook, Chum, and Pink salmon typically enter freshwater shortly before spawning and spend less time in freshwater (Bowerman et al 2016).

In the Willamette River a two-year review of spring Chinook mortality evaluated pre and post spawn females' tissue samples, and found that selected contaminants did not appear to provoke acute toxicity in the Willamette River Chinook salmon. It remains unknown whether sub-lethal or chronic toxicant effects on adult salmon physiology or behavior have affected the fitness of the individuals of this species (Keefer et al 2020). Early life exposure to PAHs can have long-lasting results, including negative impacts on cardiac structure and function in adulthood. PAH exposure also alters neurodevelopment, and changes in locomotion were reported in adult fishes, suggesting delayed effects of embryonic PAH exposure on nervous system or muscle development (Young et al 2018). Given in the paucity of available data on effects of stormwater on other salmonids, NMFS conservatively assumes that exposure among juvenile individuals of spring Chinook salmon, and winter steelhead are likely to produce sublethal and possibly chronic response, that may detriment fitness and survival among some of the exposed individuals at later lifestages.

"Cumulative effects" are those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Section 7 of the BA discusses cumulative effects and identifies no non-federal actions occurring or likely to occur within the affected area other than this proposed action.

Integration and synthesis of information for the status of species, environmental baseline, effects of the action, and cumulative effects is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. Here, we add the effects of the action to the environmental baseline and the cumulative effects, taking into account the status of the species and critical habitat, to formulate our biological opinion as to whether the proposed action is likely to: (1) Reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or

appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

As described in Section 5 of the BA and information cited therein, individual Puget Sound Chinook and Puget Sound Steelhead use the action area to complete part of their life history requirements. Some salmon and steelhead migrate and rear in the action area, while others only migrate through, once as out-migrating juveniles and then again as adult fish on upstream spawning migration.

Puget Sound Chinook and Puget Sound Steelhead addressed in this opinion have declined due to numerous factors. The one factor for decline that all these species share is degradation of freshwater and estuarine habitat, both quantity and quality. Human development of the Pacific Northwest has caused significant negative changes to stream and estuary habitat across the range of these species. The specific populations affected are the White River Spring population of PS Chinook and Puyallup River Fall Chinook, the White River Winter Run Steelhead, and Puyallup River Winter Run steelhead. The White River Spring Chinook population is the only extant early timed population remaining in the South Puget Sound geographic region. As such, this population is categorized as a tier 1 population, meaning it is essential for preservation, restoration, and recovery of the ESU (WDFW and PSIT 2017). As of the 2015 status update (NWFSC 2015) White River Spring Chinook productivity had been below replacement for several years, White River WR Steelhead were increasing in abundance, and Puyallup River Fall Chinook had been below replacement for several decades, and the Puyallup River/Carbon River WR steelhead population was forecast to decline by about 90% in 20 years and 99% in 45 years.

As described in Section 6 of the BA, the environmental baseline within the action area is severely degraded due to the commercial and residential development that has occurred on either bank of the river. Climate change is likely to exacerbate several of the ongoing habitat issues, in particular, increased summer temperatures, decreased summer flows in the freshwater environment, increased forest fire occurrence, ocean acidification, and sea level rise in the marine environment. Water temperatures are high, and floodplain connectivity is low.

As described in Section 2 of the BA, the pile driving analysis is a critical factor in our assessment. The impact reduction measures, or best management practices (BMPs), as outlined in section 3, to be applied were carefully chosen based on timing, impact area reduction, pile driving, and sediment and noise containment. Water quality impacts associated with stormwater runoff from impervious surfaces are also a concern, despite the addition of treatment.

As described in Sections 7 and 8 of the BA, the effects of the proposed pile driving will be short-term, intermittent and localized. These effects will be caused by the pile driving and will be distributed over a period of 36 days across three work windows – we expect that the number of fish injured or killed by exposure to sound pressure will be low based on the use of the bubble curtain, and the limited number of days of pile driving, as well as the limited driving per day. Aquatic and riparian habitat at the test site and within the action area are expected to have moderate-term impacts on thermal input, cover, and detrital prey base that last for several years while tree canopy is re-established. Water quality diminishments from suspended sediment is expected to short term without significant impairment of the conservation roles of water quality on rearing or migration, and exposed fish are not likely to be injured by their exposure, as the

area and duration of suspended sediment is expected to be low, and these species can detect and avoid areas of high turbidity. These species however cannot avoid exposure to the array of contaminants in the effluent, and will be exposed, most likely at low levels, chronically, for the duration of their time in the White or Puyallup Rivers downstream of the two outfalls. Responses to such exposure are expected to be sublethal. Most fish will be exposed to complex mixtures of chemicals, and thus, identifying associations of health outcomes with specific (individual) chemicals in natural populations is extremely difficult. Furthermore, comprehensive toxicological data for most chemicals, especially for chronic exposures, are lacking, even for chemicals with high usage rates that are ubiquitous in aquatic environment. Where declines in fish populations have been observed, often the reasons, including the contribution of pollution, are not well understood, and the impacts of chemical exposure on patterns of reproductive success in wild fish are almost completely unknown. (Hamilton et al. 2015). Therefore, when we add the expected increase exposure and response to stormwater to the baseline, we cannot distinguish an increase in abundance or reproduction sufficient to alter the trends of four populations affected by the proposed action.

Regarding critical habitat, the action area is designated as critical habitat for the ESA-listed Puget Sound Chinook Puget Sound Steelhead that occur there. Those habitats were determined to have a high conservation value, based largely on their migratory, rearing, and restoration potential. Baseline conditions for the individual PBFs that comprise those critical habitats vary widely, from poor (e.g., floodplain connectivity, riparian conditions) to fair (e.g., fish passage, water quantity).

Climate change and human development have and continue to adversely impact critical habitat creating limiting factors and threats to the recovery of the ESA listed species. Climate change will likely result in a generally negative effects on stream flow and temperature. Information in Section 2 described the environmental baseline in the action area as poor, and NMFS assumes that the environmental baseline is not meeting all biological requirements of individual fish of listed species. This is due to one or more impaired aquatic habitat functions related to any of the habitat factors limiting the recovery of the species in that area. As described in Section 2, the cumulative effects are not likely to have an adverse impact on critical habitat PBFs because any future project that entails in-water work will require appropriate Federal and ESA review.

In the analysis of the effects of the action on critical habitat PBFs, we found that the effects of the pile driving will be short term. On balance, we expect critical habitat quality be unchanged as a result of the proposed sheet pile test, and therefore the proposed action is not likely to result in appreciable reduction in the value of designated critical habitat for the conservation of the species addressed but this biological opinion. Given both the increase in PGIS, and the increase in stormwater treatment, we expect that water quality conditions throughout the action area are likely to remain chronically degraded with regular exceedance of water quality standards in large rainfall events, consistent with the baseline conditions, and that the conservation role of the rearing and migration habitat, currently constrained, will neither improve nor decline appreciably as a result of this proposed action.

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of

other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of Puget Sound Chinook and Puget Sound Steelhead or destroy or adversely modify their designated critical habitats.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this ITS.

Amount or Extent of Take

In the biological opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

- Harm to juveniles and adults of Puget Sound Chinook and Puget Sound Steelhead considered in this opinion due to hydroacoustic impacts from pile driving with a vibratory or impact hammer.
- Harm to juveniles and adults of Puget Sound Chinook and Puget Sound Steelhead considered in this opinion due to the chronic contribution of contaminants in stormwater despite treatment t.
- Harm to juveniles and adults of Puget Sound Chinook and Puget Sound Steelhead considered in this opinion due to a multi-year reduction in overwater and riparian vegetation.
- Harm to juveniles and adults of Puget Sound Chinook and Puget Sound Steelhead considered in this opinion due to temporary and permanent habitat obstruction.

The distribution and abundance of fish that occur within an action area are affected by habitat quality, competition, predation, and the interaction of processes that influence genetic, population, and environmental characteristics. These biotic and environmental processes interact in ways that may be random or directional, and may operate across far broader temporal and spatial scales than are affected by the proposed action. Thus, the distribution and abundance of fish within the action area cannot be attributed entirely to habitat conditions, nor can NMFS precisely predict the number of fish that are reasonably certain to be injured or killed if their habitat is modified or degraded by the proposed action. In such circumstances, NMFS cannot provide an amount of take that would be caused by the proposed action, and must provide a

surrogate measure, called an extent of take, which is causally connected to the harm that is likely to occur.

The best available indicators for the extent of take are:

1. For harm associated with hydroacoustic impacts associated with pile driving, the extent of take is driving three piles per day for 36 days alternatively measured as 5,250 impact hammer strikes occurring on any given day.

2. For harm associated with stormwater the extent of take is based on the size and operational condition of the stormwater treatment system. The system must be sized and designed to operate at the design flow rate of peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.

For harm associated with a removed overwater and riparian vegetation the extent of take is26 trees taken from below the OHWM, or 0.94 acres of vegetation within the riparian buffer zone removed.

3. For harm associated with the migratory pathway obstruction: the spatial and temporal extent of the proposed fish exclusion is 2.76 acres otherwise measured by disruption over three in-water work windows.

These take indicators act as effective reinitiation triggers because these features best integrate the likely take pathways associated with this action, are proportional to the anticipated amount of Take, and are the most practical and feasible indicators to measure. In particular, the number minutes the impact hammer are in operation is directly correlated to the potential for harm due to hydroacoustic impacts, and thus the number of individuals harmed due to pile replacement. In addition, the extent of suspended sediment plumes rationally reflects the amount of take from suspended sediment because larger sediment plumes are correlated with harm to a larger number of individual fish.

Exceeding any of the indicators for extent of take will trigger the reinitiation provisions of this opinion.

Effect of the Take

In the biological opinion, NMFS determined that the amount or extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

“Reasonable and prudent measures” are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

The FHWA shall:

1. Minimize incidental take from pile driving

2. Minimize incidental take from reduce riparian conditions.

3. Minimize incidental take from stormwater load.

4. Ensure completion of a monitoring and reporting program to confirm that the take exemption for the proposed action is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing incidental take. The report will be submitted to NMFS no later than 60 days after the close of the last work window.

Terms and Conditions

The terms and conditions described below are non-discretionary, and the FHWA or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). The FHWA or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following term and condition implements reasonable and prudent measure 1 (Pile Driving):
   a. When possible, the applicant must use a vibratory hammer for pile installation. If an impact hammer is used in depths > 2 feet of water, a bubble curtain must be utilized during impact hammer strikes.

2. The following term and condition implements reasonable and prudent measure 2 (riparian condition):
   a. Replanting of riparian areas must occur within 1 year of the completion of construction of the Stewart Road Bridge. Plantings shall be monitored for 5 years to ensure survival. In each year of monitoring, failed plantings shall be replaced at the beginning of the next wet season (October) to ensure maximum replacement tree cover.

3. The following term and condition implements reasonable and prudent measure 3 (stormwater):
   a. Conduct inspections as required by the WA State Department of Ecology.
   b. Design flow rate of peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.
   c. Provide any required state water quality monitoring reports to: projectreports.wcr@noaa.gov and include the WCR tracking number, WCRO-2019-00733.

4. The following term and condition implements reasonable and prudent measure 4 (monitoring):
   a. Reporting. The applicant must report all monitoring items within 60 days of the close of any work window that had in-water work within it, including:
      i. A discussion of implementation of the terms and conditions in #1, above.
      ii. Turbidity observations.
      iii. Number, type, and size of piles installed.
      iv. Dates of initiation and completion of pile driving.
      v. Pile driving method.
      vi. Total minutes of vibratory and impact hammer use.
      vii. Dates of initiation and completion of in-water work.
      viii. The applicant must report any exceedance of take covered by this opinion to NMFS immediately.
   b. The applicant must submit monitoring reports to: National Marine Fisheries Service Oregon Washington Coastal Office at: projectreports.wcr@noaa.gov and include the WCR tracking number assigned to this consultation, WCRO-2019-00733, in the title.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

The FHWA should:

- Improve or regrade and revegetate streambanks as shoreline remediation activities are carried out in the Superfund Site.
- Protect and restore riparian areas to improve water quality through appropriate handling of contaminated sediment and debris.
- The Federal Highways should continue to develop pervious pavement technology, design, and applications to ensure stormwater runoff from transportation infrastructure is reduced.

Please notify NMFS if the FHWA or the applicant carries out this recommendation so that we will be kept informed of actions that are intended to improve the conservation of listed species or their designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by [name of action agency] or by NMFS, where discretionary Federal involvement or control over the action has been retained or

is authorized by law and (1) The amount or extent of incidental taking specified in the ITS is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this biological opinion; or if (4) a new species is listed or critical habitat designated that may be affected by the identified action.

Essential Fish Habitat

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was conducted pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. The proposed action and action area for this consultation are described in the Introduction to this document. The action area includes areas designated as EFH for various life-history stages of Chinook and coho salmon as identified in the Fishery Management Plan for Pacific coast salmon (Pacific Fishery Management Council 2014). Based on information provided by the action agency and the analysis of effects presented in the ESA portion of this document, NMFS concludes that proposed action will have adverse effects on EFH designated for Chinook, pink, and coho salmon. These effects include a temporary reduction in water quality from increased suspended sediment, a permanent increase in an array of unregulated urban stormwater contaminants, as well as hydroacoustic impacts from pile installation and removal, and a short-term loss of benthic invertebrates due to sediment disturbance.

EFH conservation recommendations include:

1. Monitoring and Reporting: The FHWA should recommend that the applicant follow terms and conditions 2(a) and 2(b) as presented in the ESA portion of this document.

2. The FHWA should recommend that the applicant identify and implement habitat enhancement or restoration activities in the White River that:
    a. Increase the amount of shallow-water habitat in the reach to benefit salmonids
    b. Restore or create off-channel habitat or access to off-channel habitat, side channels, alcoves, wetlands, and floodplains
    c. Remove old/derelict docks and piles that are no longer in use during site work
    d. Protect and restore riparian areas to improve water quality, provide long-term supply of large wood to streams, and reduce impacts that alter other natural processes
    e. Improve or regrade and revegetate streambanks
    f. Restore instream habitat complexity, including large wood placement
    g. Remove invasive plant species from upland vegetation and plant native species

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described previously, designated EFH for Pacific Coast salmon.

As required by section 305(b)(4)(B) of the MSA, the FHWA must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative time frames for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH.

In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

The FHWA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The biological opinion will be available through NOAA Institutional Repository https://repository.library.noaa.gov/. A complete record of this consultation is on file at the Oregon Washington Coastal Office, Portland, Oregon.

Please direct questions regarding this letter to Jennifer Quan, jennifer.quan@NOAA.gov.

Sincerely,

Kim W. Kratz, Ph.D
Assistant Regional Administrator
Oregon Washington Coastal Office

cc: Dean Moberg, FHWA Project Manager

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ATTACHMENT·1¶

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July·2017¶

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GENERAL·USE·LEVEL·DESIGNATION·FOR·BASIC,·ENHANCED,·AND·PHOSPHORUS·TREATMENT¶

¶

For·the¶

¶

MWS-Linear·Modular·Wetland¶

¶

Ecology's·Decision:¶
Based·on·Modular·Wetland·Systems,·Inc.·application·submissions,·including·the·Technical·Evaluation·Report,·dated·April·1,·2014,·Ecology·hereby·issues·the·following·use·level·designation:¶

1.·General·use·level·designation·(GULD)·for·the·MWS-Linear·Modular·Wetland·Stormwater·Treatment·System·for·Basic·treatment¤

¤ Sized·at·a·hydraulic·loading·rate·of·1·gallon·per·minute·(gpm)·per·square·foot·(sq·ft)·of·wetland·cell·surface·area.·For·moderate·pollutant·loading·rates·(low·to·medium·density·residential·basins),·size·the·Prefilters·at·3.0·gpm/sq·ft·of·cartridge·surface·area.·For·high·loading·rates·(commercial·and·industrial·basins),·size·the·Prefilters·at·2.1·gpm/sq·ft·of·cartridge·surface·area.¤

2.·General·use·level·designation·(GULD)·for·the·MWS-Linear·Modular·Wetland·Stormwater·Treatment·System·for·Phosphorus·treatment¤

¤ Sized·at·a·hydraulic·loading·rate·of·1·gallon·per·minute·(gpm)·per·square·foot·(sq·ft)·of·wetland·cell·surface·area.·For·moderate·pollutant·loading·rates·(low·to·medium·density·residential·basins),·size·the·Prefilters·at·3.0·gpm/sq·ft·of·cartridge·surface·area.·For·high·loading·rates·(commercial·and·industrial·basins),·size·the·Prefilters·at·2.1·gpm/sq·ft·of·cartridge·surface·area.¤

3.·General·use·level·designation·(GULD)·for·the·MWS-Linear·Modular·Wetland·Stormwater·Treatment·System·for·Enhanced·treatment¤

¤ Sized·at·a·hydraulic·loading·rate·of·1·gallon·per·minute·(gpm)·per·square·foot·(sq·ft)·of·wetland·cell·surface·area.·For·moderate·pollutant·loading·rates·(low·to·medium·density·residential·basins),·size·the·Prefilters·at·3.0·gpm/sq·ft·of·cartridge·surface·area.·For·high·loading·rates·(commercial·and·industrial·basins),·size·the·Prefilters·at·2.1·gpm/sq·ft·of·cartridge·surface·area.¤

4. Ecology approves the MWS - Linear Modular Wetland Stormwater Treatment System units for Basic, Phosphorus, and Enhanced treatment at the hydraulic loading rate listed above. Designers shall calculate the water quality design flow rates using the following procedures:¶

¶

- Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.¶
- Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.¶
- Entire State: For treatment installed downstream of detention, the water quality design flow rate is the full 2-year release rate of the detention facility.¶

¶

¶

Ecology's Conditions of Use:¶

Applicants shall comply with the following conditions:¶

1. Design, assemble, install, operate, and maintain the MWS – Linear Modular Wetland Stormwater Treatment System units, in accordance with Modular Wetland Systems, Inc. applicable manuals and documents and the Ecology Decision.¶
2. Each site plan must undergo Modular Wetland Systems, Inc. review and approval before site installation. This ensures that site grading and slope are appropriate for use of a MWS – Linear Modular Wetland Stormwater Treatment System unit.¶
3. MWS – Linear Modular Wetland Stormwater Treatment System media shall conform to the specifications submitted to, and approved by, Ecology.¶
4. The applicant tested the MWS – Linear Modular Wetland Stormwater Treatment System with an external bypass weir. This weir limited the depth of water flowing through the media, and therefore the active treatment area, to below the root zone of the plants. This GULD applies to MWS – Linear Modular Wetland Stormwater Treatment Systems whether plants are included in the final product or not.¶
5. Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of manufactured filter treatment device.¶

¶

- Typically, Modular Wetland Systems, Inc. designs MWS - Linear Modular Wetland systems for a target prefilter media life of 6 to 12 months.¶
- Indications of the need for maintenance include effluent flow decreasing to below the design flow rate or decrease in treatment below required levels.¶
- Owners/operators must inspect MWS - Linear Modular Wetland systems for a minimum of twelve months from the start of post-construction operation to determine site-specific¶

¶

¶

- Standing water remains in the vault between rain events, or¶
- Bypass occurs during storms smaller than the design storm.¶
- If excessive floatables (trash and debris) are present (but no standing water or excessive sedimentation), perform a minor maintenance consisting of gross solids removal, not prefilter media replacement.¶
- Additional data collection will be used to create a correlation between pretreatment chamber sediment depth and pre-filter clogging (see *Issues to be Addressed by the Company* section below)¶

¶

6. Discharges from the MWS - Linear Modular Wetland Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.¶

¶

Applicant: Modular Wetland Systems, Inc.¶
Applicant's Address: *PO. Box 869 Oceanside, CA 92054*¶
¶
Application Documents:¶

- *Original Application for Conditional Use Level Designation*, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., January 2011¶
- *Quality Assurance Project Plan*: Modular Wetland system – Linear Treatment System performance Monitoring Project, draft, January 2011.¶
- *Revised Application for Conditional Use Level Designation*, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., May 2011¶
- *Memorandum: Modular Wetland System-Linear GULD Application Supplementary Data, April 2014*¶
- *Technical Evaluation Report: Modular Wetland System Stormwater Treatment System Performance Monitoring, April 2014.*¶

¶

- **Applicant's Use Level Request:¶**
- General use level designation as a Basic, Enhanced, and Phosphorus treatment device in accordance with Ecology's Guidance for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE) January 2011 Revision.¶

¶

Applicant's Performance Claims:¶

- The MWS – Linear Modular wetland is capable of removing a minimum of 80-percent of TSS from stormwater with influent concentrations between 100 and 200 mg/l.¶
- The MWS – Linear Modular wetland is capable of removing a minimum of 50-percent of Total Phosphorus from stormwater with influent concentrations between 0.1 and 0.5 mg/l.¶
- The MWS – Linear Modular wetland is capable of removing a minimum of 30-percent of dissolved Copper from stormwater with influent concentrations between 0.005 and 0.020 mg/l.¶
- The MWS – Linear Modular wetland is capable of removing a minimum of 60-percent of dissolved Zinc from stormwater with influent concentrations between 0.02 and 0.30 mg/l.¶

¶

Ecology Recommendations:¶

- **Modular Wetland Systems, Inc. has shown Ecology, through laboratory and field testing, that the MWS – Linear Modular Wetland Stormwater Treatment System filter system is capable of attaining Ecology's Basic, Total phosphorus, and Enhanced treatment goals.¶**

¶

Findings of Fact:¶

Laboratory Testing¶

The MWS-Linear Modular wetland has the:¶

- Capability to remove 99 percent of total suspended solids (using Sil-Co-Sil 106) in a quarter-scale model with influent concentrations of 270 mg/L.¶
- Capability to remove 91 percent of total suspended solids (using Sil-Co-Sil 106) in laboratory conditions with influent concentrations of 84.6 mg/L at a flow rate of 3.0 gpm per square foot of media.¶
- Capability to remove 93 percent of dissolved Copper in a quarter-scale model with influent concentrations of 0.757 mg/L.¶
- Capability to remove 79 percent of dissolved Copper in laboratory conditions with influent concentrations of 0.567 mg/L at a flow rate of 3.0 gpm per square foot of media.¶
- Capability to remove 80.5-percent of dissolved Zinc in a quarter-scale model with influent concentrations of 0.95 mg/L at a flow rate of 3.0 gpm per square foot of media.¶
- Capability to remove 78-percent of dissolved Zinc in laboratory conditions with influent concentrations of 0.75 mg/L at a flow rate of 3.0 gpm per square foot of media.¶

¶

Field·Testing¶

- → Modular·Wetland·Systems,·Inc.·conducted·monitoring·of·an·MWS-Linear·(Model·#·MWS-L-4-13)·from·April·2012·through·May·2013,·at·a·transportation·maintenance·facility·in·Portland,·Oregon.·The·manufacturer·collected·flow-weighted·composite·samples·of·the·system's·influent·and·effluent·during·28·separate·storm·events.·The·system·treated·approximately·75·percent·of·the·runoff·from·53.5·inches·of·rainfall·during·the·monitoring·period.·The·applicant·sized·the·system·at·1·gpm/sq·ft.·(wetland·media)·and·3gpm/sq·ft.·(prefilter).¶
- → Influent·TSS·concentrations·for·qualifying·sampled·storm·events·ranged·from·20·to·339·mg/L.·Average·TSS·removal·for·influent·concentrations·greater·than·100·mg/L·(n=7)·averaged·85·percent.·For·influent·concentrations·in·the·range·of·20-100·mg/L·(n=18),·the·upper·95·percent·confidence·interval·about·the·mean·effluent·concentration·was·12.8·mg/L.¶
- → Total·phosphorus·removal·for·17·events·with·influent·TP·concentrations·in·the·range·of·0.1·to·0.5·mg/L·averaged·65·percent.·A·bootstrap·estimate·of·the·lower·95·percent·confidence·limit·(LCL95)·of·the·mean·total·phosphorus·reduction·was·58·percent.¶
- → The·lower·95·percent·confidence·limit·of·the·mean·percent·removal·was·60.5·percent·for·dissolved·zinc·for·influent·concentrations·in·the·range·of·0.02·to·0.3·mg/L·(n=11).¶
- → The·lower·95·percent·confidence·limit·of·the·mean·percent·removal·was·32.5·percent·for·dissolved·copper·for·influent·concentrations·in·the·range·of·0.005·to·0.02·mg/L·(n=14)·at·flow·rates·up·to·28·gpm·(design·flow·rate·41·gpm).·Laboratory·test·data·augmented·the·data·set,·showing·dissolved·copper·removal·at·the·design·flow·rate·of·41·gpm·(93·percent·reduction·in·influent·dissolved·copper·of·0.757·mg/L).¶

¶

Issues·to·be·addressed·by·the·Company:¶

1. → Modular·Wetland·Systems,·Inc.·should·collect·maintenance·and·inspection·data·for·the·first·year·on·all·installations·in·the·Northwest·in·order·to·assess·standard·maintenance·requirements·for·various·land·uses·in·the·region.·Modular·Wetland·Systems,·Inc.·should·use·these·data·to·establish·required·maintenance·cycles.¶
2. → Modular·Wetland·Systems,·Inc.·should·collect·pre-treatment·chamber·sediment·depth·data·for·the·first·year·of·operation·for·all·installations·in·the·Northwest.·Modular·Wetland·Systems,·Inc.·will·use·these·data·to·create·a·correlation·between·sediment·depth·and·pre-filter·clogging.↵

¶

Technology·Description:¶

_____¶

Download·at·http://www.modularwetlands.com/¶

Contact·Information:¶
Applicant:·Zach·Kent¶
BioClean·A·Forterra·Company.·398·Vi9a·El·Centro¶
Oceanside,·CA·92058¶
zach.kent@forterrabp.com¶

¶

Applicant website: http://www.modularwetlands.com/¶

¶

Ecology web link:
http://www.ecy.wa.gov/programs/wg/stormwater/newtech/index.html¶

¶

Ecology: Douglas C. Howie, P.E. Department of Ecology Water Quality Program
(360) 407-6444¶
douglas.howie@ecy.wa.gov¶

¶

Revision History¶

Date¤	Revision¤	¤
June 2011¤	Original use-level-designation document¤	¤
September 2012¤	Revised dates for TER and expiration¤	¤
January 2013¤	Modified Design Storm Description, added Revision Table, added maintenance discussion, modified format in accordance with Ecology standard¤	¤
December 2013¤	Updated name of Applicant¤	¤
April 2014¤	Approved GULD designation for Basic, Phosphorus, and Enhanced treatment¤	¤
December 2015¤	Updated GULD to document the acceptance of MWS-Linear Modular Wetland installations with or without the inclusion of plants¤	¤
July 2017¤	Revised Manufacturer Contact Information (name, address, and email)¤	¤

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Page Break¶