# Attachment 12501.3-SPD - Examples for SPD Mitigation Ratio Setting Checklist

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**Checklist Example 1:** One impact site/type with two mitigation sites/types

**Impact(s):** The applicant is proposing to permanently impact 0.3 acre (870 linear feet) of intermittent stream with mature, native riparian vegetation (southern willow woodland).

**Proposed mitigation:** The applicant has proposed to mitigate through: 1) 0.3 acre of on-site, in-kind establishment of intermittent stream by re-aligning the existing stream such that the new alignment would be constructed across existing uplands (prior to grading to reduce elevations appropriately); and 2) 0.6 acre of off-site, out-of-kind enhancement of depressional wetland through a mitigation bank.

**Method:** The project manager has completed one checklist (see below), using column "A" for the on-site, proposed mitigation and column "B" for the off-site proposed mitigation.

**Results:** After completing the checklist columns "A" and "B", and after discussing the results with the applicant, the project manager has determined the final mitigation ratios to be 4.3:1 for on-site (0.3 acre, as proposed) and 5:1 for off-site (1.15 acre of enhancement credit).  As part of this process, the applicant agreed to increase his/her off-site mitigation from 0.6 acre to 1.15 acre.  The project manager then entered the final requirement on the last page of the checklist and added the completed checklist to the administrative record (either as a paper copy in the paper file or as an electronic file in ORM).  Alternatively, the project manager and/or applicant could have proposed all on-site mitigation (1.29 acre of establishment) or all off-site mitigation (1.5 acre of enhancement) to mitigate for the proposed impact.  Regardless of the outcome of any negotiations, the final mitigation ratio(s) and requirement(s) should be explicitly described in steps 9 and 10 of the checklist.

## SPD mitigation ratio setting checklist

<table>
<tr>
<td>1</td>
<td colspan="4">
Date: _____5/17/2010_____ Corps file no.: ____2010-XYZ_____ Project Manager: _____John Doe_____

Impact site name: _____Tullay Creek_____ ORM impact resource type: _____stream_____ Hydrology: intermittent _____
Impact Cowardin or HGM type: _____riverine___ Impact area (acres): _____0.3_____ Impact distance (linear feet): _____870_____
</td>
</tr>
<tr>
<td></td>
<td></td>
<td>
Column A:
Mitigation site name: __Tullay Creek___
Mitigation type: _____establishment_____
Resource type: _____stream_____
Cowardin/HGM type: riverine
Hydrology: intermittent
</td>
<td>
Column B (optional):
Mitigation site name: WL bank
Mitigation type: __enhancement_
Resource type: _non-tidal WL__
Cowardin/HGM type: palustrine
Hydrology: saturated_____
</td>
<td>
Column C (optional):
Mitigation site name: _____
Mitigation type: _____
Resource type: _____
Cowardin/HGM type: _____
Hydrology: _____
</td>
</tr>
<tr>
<td>2</td>
<td>
**QUALITATIVE impact-mitigation comparison**:

Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3.

Yes ☐  No ☒

Optional: use Table 1 (page 3).
</td>
<td>
Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).

Starting ratio: 1:1
Ratio adjustment: 0
Baseline ratio: 1:1
PM justification:  impact and mitigation are within the same water body, habitat type, etc., so functional gain and loss would be equal.
</td>
<td>
Starting ratio: 1:1
Ratio adjustment: +3
Baseline ratio: 4:1
PM justification: Functional loss is greater than functional gain since in this case, there is total functional loss and only gain of selected functions via enhancement.
</td>
<td>
Starting ratio: 1:1
Ratio adjustment: ___
Baseline ratio: __:__
PM justification:
</td>
</tr>
</table>

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| 3 | **QUANTITATIVE impact-mitigation comparison**:<br><br>Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead). See example in attachment 12501.2. | Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive. If a functional/condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does \*not\* explicitly account for area (such as CRAM), then both steps should be used. Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).<br><br>Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ |
|---|---|---|---|---|
| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment:<br>PM justification: |
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: establishment | Ratio adjustment: +1<br>PM justification: enhancement | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: n,n: no difference between impact and mitigation types | Ratio adjustment: 0<br>PM justification: intermittent riparian (willow woodland) and depressional wetlands not substantially different in terms of relative value. | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: +0.3<br>PM justification: +0.1 for permittee-responsible mitigation, +0.2 as mitigation site did not formerly support target aquatic resource. | Ratio adjustment: 0<br>PM justification: mitigation bank, uncertainty factors not applicable. | Ratio adjustment:<br>PM justification: |

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| 8 | **Temporal loss**: | Ratio adjustment: +3<br>PM justification: a: No planned delay, impact and mitigation to be constructed simultaneously.  b: Both to include mature willow canopy (trees/woodlands), +3 to account for time to achieve full functions. | Ratio adjustment: 0<br>PM justification: bank, no delay | Ratio adjustment:<br>PM justification: |
|---|---|---|---|---|
| 9 | **Final mitigation ratio(s)**: | Column A:<br>1. Baseline ratio from step 2 or 3 = _1_:_1_<br>2. Total adjustments = __+3.3_<br>3. Final ratio:  _4.3_ : _1_<br><br>Proposed impact (total):<br>__0.3_ acre<br>_870__ linear feet<br>to<br>Resource type: ____stream_____<br>Cowardin or HGM:  riverine<br>Hydrology:  intermittent _____<br><br>Required mitigation:<br>_0.3*__ acre<br>_900__ linear feet<br>of<br>Mitigation type: __establishment_____<br>Resource type: _____same_____<br>Cowardin or HGM: ____same_____<br>Hydrology:  intermittent _____<br><br>Additional PM comments:<br>*Applicant proposed alternate, off-site mitigation to account for difference between proposed (0.3 acre establishment, 1:1) and Corps assessment using checklist (1.29 acre establishment, 4.3:1).  0.99 acre of Corps assessment not met = 0.99/1.29*100 = 77%.  77% of impact unmitigated = 0.23 acre of impact.  See column B. | Column B:<br>1. Baseline ratio from step 2 or 3 = _4_:_1_<br>2. Total adjustments = __+1__<br>3. Final ratio:  _5.0_ : _1_<br><br>Remaining impact: _0.23 acre_<br><br>Required mitigation:<br>_1.15_ acre<br>___ linear feet<br>of<br>Mitigation type: _enhancement_<br>Resource type: __non-tidal WL_<br>Cowardin or HGM: palustrine, depressional wetland<br>Hydrology: saturated_____<br><br>Additional PM comments:<br>Applicant originally proposed 0.6 acre of off-site enhancement via bank.  Through checklist, I've determined requirement should be 1.15 acre.  Applicant has agreed to provide 1.15 acre of wetland enhancement credit at XYZ bank. | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio:  __ : __<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
| 10 | **Final compensatory mitigation requirements:** | PM summary: The final compensatory mitigation requirement for this impact site is 0.3 acre (900 linear feet) of on-site riverine-intermittent stream (realignment of Tullay Creek, mature willow woodland) and 1.15 acre of off-site enhancement of depressional wetland through the XYZ mitigation bank. | | |

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## Checklist Example 2: One impact site/type with direct and indirect impacts to vernal pools

**Impact(s):** The applicant is proposing to directly impact 1.5 acres of high quality vernal pool habitat. Indirect impacts to 0.75 acre of high quality vernal pool habitat are also expected to occur.

**Proposed mitigation:** The applicant has proposed to mitigate direct impacts at a 1.3:1 ratio and indirect impacts at a 1:1 ratio through permittee-responsible re-establishment in the adjacent watershed.

**Method:** The project manager has completed one checklist (see below), using column "A" to calculate direct impact mitigation and column "B" for indirect impact mitigation. The qualitative analysis was utilized, as SPK does not yet have an approved functional assessment method.

**Results:** After completing the checklist columns "A" and "B", the project manager determined the final mitigation ratios to be 3.6:1 for direct impacts and 2.6:1 for indirect impacts. The project manager then entered the final requirement on the last page of the checklist and added the completed checklist to the administrative record (either as a paper copy in the paper file or as an electronic file in ORM).

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# SPD mitigation ratio setting checklist

<table>
<tr>
<td>1</td>
<td colspan="4">
Date: _____5/24/2010_____ Corps file no.: _____2010-XYZ_____ Project Manager: _____John Doe_____<br><br>
Impact site name: _____Placer 530_____ ORM impact resource type: _____wetlands adjacent to non-RPWs_____ Hydrology: seasonally-flooded_____<br>
Impact Cowardin or HGM type: _____depressional____ Impact area (acres): _____1.5 direct, 0.75 indirect_____ Impact distance (linear feet): _____N/A_____
</td>
</tr>
<tr>
<td></td>
<td></td>
<td>
Column A: Direct Impact<br>
Mitigation site name: Limnanthes Ranch<br>
Mitigation type: re-establishment<br>
Resource type: wetlands adj. to non-RPWs<br>
HGM type: depressional<br>
Hydrology: seasonally-flooded _____
</td>
<td>
Column B: Indirect Impact<br>
Mitigation site name: Limnanthes Ranch<br>
Mitigation type: re-establishment<br>
Resource type: wetlands adj. to non-RPWs<br>
HGM type: depressional<br>
Hydrology: seasonally-flooded ___
</td>
<td>
Column C (optional):<br>
Mitigation site name: _____<br><br>
Mitigation type: _____<br><br>
Resource type: _____<br><br>
Cowardin/HGM type: _____<br><br>
Hydrology: _____
</td>
</tr>
<tr>
<td>2</td>
<td>
<strong>QUALITATIVE impact-mitigation comparison</strong>:<br><br>
Has a Corps-approved functional/condition assessment been obtained? If not, complete step 2; otherwise, complete step 3.<br><br>
Yes ☐ No ☒<br><br>
Optional: use Table 1 (page 3).
</td>
<td>
Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).<br><br>
Starting ratio: 1:1<br>
Ratio adjustment: +0.2<br>
Baseline ratio: 1.2:1<br>
PM justification: Due to differences between vernal pool inoculum in the different locations, the mitigation site is not expected to maintain the range of plant and animal communities (habitat functions) provided by the pre-project impact site.
</td>
<td>
Starting ratio: 1:1<br>
Ratio adjustment: +0.3<br>
Baseline ratio: 1.3:1<br>
PM justification: Indirectly impacted vernal pools are expected to have an approximately 50% decline in functions. Due to differences between vernal pool inoculum in the different locations, the mitigation site is not expected to attain the range of plant and animal communities provided by the pre-project impact site (less than 50% gain in habitat functions expected).
</td>
<td>
Starting ratio: 1:1<br>
Ratio adjustment: ___<br>
Baseline ratio: __:__<br>
PM justification:
</td>
</tr>
</table>

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| 3 | **QUANTITATIVE impact-mitigation comparison**:<br><br>Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead). See example in attachment 12501.2. | Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive. If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does *not* explicitly account for area (such as CRAM), then both steps should be used. Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).<br><br>Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ |
|---|---|---|---|
| 4 | **Mitigation site location**: | Ratio adjustment: +1<br>PM justification: Mitigation will occur outside of the watershed | Ratio adjustment: +1<br>PM justification: Mitigation will occur outside of the watershed | Ratio adjustment:<br>PM justification: |
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: re-establishment | Ratio adjustment: 0<br>PM justification: re-establishment | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: mitigation will be in-kind | Ratio adjustment: 0<br>PM justification: mitigation will be in-kind | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: +0.4<br>PM justification: +0.2 for permittee-responsible mitigation, +0.2 for difficult to replace resources | Ratio adjustment: +0.4<br>PM justification: +0.2 for permittee-responsible mitigation, +0.2 for difficult to replace resources | Ratio adjustment:<br>PM justification: |
| 8 | **Temporal loss**: | Ratio adjustment: +1<br>PM justification: mitigation will occur at time of impact, herbaceous species | Ratio adjustment: +1<br>PM justification: mitigation will occur at time of impact, herbaceous species | Ratio adjustment:<br>PM justification: |

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| 9 | **Final mitigation ratio(s):** | Column A:<br>1. Baseline ratio from step 2 or 3 = _1.2_:_1_<br>2. Total adjustments = _+2.4__<br>3. Final ratio: _3.6_ : _1_<br><br>Proposed impact (total):<br>__1.5_ acre<br>___ linear feet<br>to<br>Resource type: _____wetland_____<br>Cowardin or HGM: ____depressional___<br>Hydrology: seasonally-flooded _____<br><br>Required mitigation:<br>_5.4__ acre<br>___ linear feet<br>of<br>Mitigation type: _re-establishment_____<br>Resource type: _____wetland_____<br>Cowardin or HGM: ____depressional___<br>Hydrology: seasonally-flooded _____<br><br>Additional PM comments:<br>Total direct impacts | Column B:<br>1. Baseline ratio from step 2 or 3 = _1.3_:_1_<br>2. Total adjustments = _+2.4__<br>3. Final ratio: _3.7_ :_1_<br><br>Remaining impact: _0.75_acre<br><br>Required mitigation:<br>_2.78_ acre<br>___ linear feet<br>of<br>Mitigation type: _re-establishment_<br>Resource type: __wetland_<br>Cowardin or HGM: depressional<br>Hydrology: seasonally-flooded ___<br><br>Additional PM comments:<br>Remaining 0.75 acre of impacts are indirect impacts to vernal pool habitat | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
| 10 | **Final compensatory mitigation requirements:** | PM summary: The final compensatory mitigation requirement for this impact site is 8.18 acres of vernal pool habitat at the proposed off-site location.  This is an increase of 5.48 acres over the 2.7 acres proposed. | | |

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**Checklist Example 3:** Shallow seasonal wetland, one impact site/type with two mitigation sites/types

**Impact(s):** The applicant is proposing to permanently impact 0.4 acre of shallow seasonal wetlands, which contain no vernal pool species.

**Proposed mitigation:** The applicant has proposed to mitigate through either: 1) on-site, in-kind establishment of seasonal wetlands constructed in existing uplands (prior to grading to reduce elevations appropriately); or 2) off-site, in-kind mitigation bank.

**Method:** The project manager has completed one checklist (see below), using column "A" for the on-site, proposed mitigation and column "B" for the off-site proposed mitigation.

**Results:** After completing the checklist columns "A" and "B", and after discussing the results with the applicant, the project manager has determined the final mitigation ratios to be 2.65:1 for on-site seasonal wetland establishment **OR** 1:1 for off-site seasonal wetland mitigation bank establishment credit.

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# SPD mitigation ratio setting checklist

| 1 | Date: _____5/17/2010_____ Corps file no.: _____2010-XYZ_____ Project Manager: _____John Doe_____ |||
|---|---|---|---|
| | Impact site name: _____SF Impacted Wetland _____ ORM impact resource type: _____seasonal wetland_____ Hydrology: _____ <br> Impact Cowardin or HGM type: _____ palustrine - emergent ___ Impact area (acres): _____0.4_____ Impact distance (linear feet): _____n/a_____ |||
| | Column A: <br> Mitigation site name: __Project site___ <br> Mitigation type: _____establishment_____ <br> Resource type: _____seasonal wetland____ <br> Cowardin/HGM type: palustrine emergent <br> Hydrology: seasonally-flooded _____ | Column B (optional): <br> Mitigation site name: SF bank <br> Mitigation type: __establishment_ <br> Resource type: seasonal wetland_ <br> Cowardin/HGM type: palustrine estuarine <br> Hydrology: seasonally-flooded __ | Column C (optional): <br> Mitigation site name: _____ <br> Mitigation type: _____ <br> Resource type: _____ <br> Cowardin/HGM type: _____ <br> Hydrology: _____ |
| 2 | **QUALITATIVE impact-mitigation comparison**: <br><br> Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3. <br><br> Yes ☐  No ☒ <br><br> Optional: use Table 1 (page 3). | Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10). <br><br> Starting ratio: 1:1 <br> Ratio adjustment: 0 <br> Baseline ratio: 1:1 <br> PM justification: impacts and mitigation sites are the same habitat type, so functional gain and loss would be equal. | Starting ratio: 1:1 <br> Ratio adjustment: 0 <br> Baseline ratio: 1:1 <br> PM justification: impacts and mitigation sites are the same habitat type, so functional gain and loss would be equal. | Starting ratio: 1:1 <br> Ratio adjustment: ___ <br> Baseline ratio: __:__ <br> PM justification: |

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| 3 | **QUANTITATIVE impact-mitigation comparison**:<br><br>Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead).  See example in attachment 12501.2. | Note: steps 2 and 3 are mutually exclusive.  If step 3 is used, steps 3 and 5 may also be mutually exclusive.  If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does \*not\* explicitly account for area (such as CRAM), then both steps should be used.  Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).<br><br>Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ |
|---|---|---|---|---|
| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification:  impact and mitigation would be within the same watershed | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment:<br>PM justification: |
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: establishment | Ratio adjustment: 0<br>PM justification:  establishment | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: n,n: no difference between impact and mitigation types | Ratio adjustment: 0<br>PM justification:  n,n: no difference between impact and mitigation types | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: +0.4<br>PM justification: +0.1 for permittee-responsible mitigation, +0.2 as mitigation site did not formerly support target aquatic resource, +0.1 for planned vegetation maintenance | Ratio adjustment: 0<br>PM justification: mitigation bank, uncertainty factors not applicable. | Ratio adjustment:<br>PM justification: |
| 8 | **Temporal loss**: | Ratio adjustment: +1.25<br>PM justification: Delay of 5 months between impact and mitigation construction, mitigation = herbaceous. | Ratio adjustment: 0<br>PM justification: bank, no delay | Ratio adjustment:<br>PM justification: |

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| 9 | **Final mitigation ratio(s):** | Column A:<br>1. Baseline ratio from step 2 or 3 = _1_:_1_<br>2. Total adjustments = _1.65_<br>3. Final ratio:  _2.65_ :_1_<br><br>Proposed impact (total):<br>__0.4_ acre<br>_n/a__ linear feet<br>to<br>Resource type: ____seasonal wetland___<br>Cowardin or HGM:  palustrine-emergent<br>Hydrology:  seasonally-flooded ____<br><br>Required mitigation:<br>_1.06__ acre<br>_n/a__ linear feet<br>of<br>Mitigation type: _establishment_____<br>Resource type: _____same_____<br>Cowardin or HGM: ____same_____<br>Hydrology:  seasonally-flooded ___<br><br>Additional PM comments:<br>On-site mitigation of same type | Column B:<br>1. Baseline ratio from step 2 or 3 = _1_:_1__<br>2. Total adjustments = _0_<br>3. Final ratio:  _1_ :_1_<br><br>Remaining impact: __0.4 acre_<br><br>Required mitigation:<br>_0.4_ acre<br>_n/a__ linear feet<br>of<br>Mitigation type: _establishment_<br>Resource type: seasonal wetland<br>Cowardin or HGM:  palustrine-emergent<br>Hydrology:  seasonally-flooded __<br><br>Additional PM comments:<br>Mitigation bank (as an alternative mitigation option). | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio:  __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
| 10 | **Final compensatory mitigation requirements:** | PM summary:  The impact to 0.4 acre of fill in a shallow seasonal wetland can be mitigated by either on-site wetland establishment, **OR** by purchasing credits in a wetland establishment bank in the same watershed/service area.  The amount required for on-site establishment is 1.06 acre to satisfy the mitigation requirements.  The amount for off-site wetland bank credits is 0.4 acre of establishment credits.<br><br>After further communication with applicant, the final requirement will be for 0.4 acre of off-site establishment through a mitigation bank. | | |

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**Checklist Example 4:** Scenario: ephemeral stream, one impact site and one mitigation site (ILF)

**Impact(s):** The applicant is proposing to permanently impact 0.3 acre (1276 linear feet) of ephemeral stream with mature, native xeroriparian vegetation (mesquite, palo verde, etc.).

**Proposed mitigation:** The applicant has proposed to mitigate through: 1) 0.3 acre of off-site, out-of-kind re-establishment of riparian gallery with cottonwood, willows and adjacent wetlands at an in-lieu fee program.

**Method:** The project manager has completed one checklist (see below).

**Results:** Although the calculated ratio was 1:1.5 (i.e., 0.67:1), a 1:1 ratio was used, as step 3 was not completed (if no functional/condition assessment is conducted, 1:1 is the minimum ratio allowed under the 2008 mitigation rule). After completing the checklist column "A", and after discussing the results with the applicant, the project manager has determined the final mitigation ratio to be 1:1 (0.3 acre, as proposed).

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<table>
<tr>
<td>1</td>
<td colspan="4">
Date: _____6/2/2010_____ Corps file no.: _____2010-XYZ_____ Project Manager: _____Jane Dough_____

Impact site name: _____Unnamed wash_____ ORM impact resource type: _____stream_____ Hydrology: ephemeral_____<br>
Impact Cowardin or HGM type: _____riverine_____ Impact area (acres): _____0.3_____ Impact distance (linear feet): _____
</td>
</tr>
<tr>
<td></td>
<td></td>
<td>
Column A:<br>
Mitigation site name: _Powers Butte site_<br>
Mitigation type: ____re-establishment_____<br>
Resource type: stream & adjacent wetland<br>
Cowardin/HGM type: _riverine (riparian gallery with cottonwood, willows and adjacent wetlands)_<br>
Hydrology: intermittent (stream), saturated (wetlands)
</td>
<td>
Column B (optional):<br>
Mitigation site name: _____<br>
Mitigation type: _____<br>
Resource type: _____<br>
Cowardin/HGM type: _____<br>
Hydrology: _____
</td>
<td>
Column C (optional):<br>
Mitigation site name: _____<br>
Mitigation type: _____<br>
Resource type: _____<br>
Cowardin/HGM type: _____<br>
Hydrology: _____
</td>
</tr>
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<td>2</td>
<td>
**QUALITATIVE impact-mitigation comparison**:

Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3.

Yes ☐  No ☒

Optional: use Table 1 (page 3).
</td>
<td>
Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).

Starting ratio: 1:1<br>
Ratio adjustment: -0.5<br>
Baseline ratio: 1:1.5<br>
PM justification: The mitigation site generally provides more functions than the impact site. Therefore the adjustment was set at -0.5.
</td>
<td>
Starting ratio: 1:1<br>
Ratio adjustment: ___<br>
Baseline ratio: __:__<br>
PM justification:
</td>
<td>
Starting ratio: 1:1<br>
Ratio adjustment: ___<br>
Baseline ratio: __:__<br>
PM justification:
</td>
</tr>
</table>

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| 3 | **QUANTITATIVE impact-mitigation comparison**:<br><br>Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead). See example in attachment 12501.2. | Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive. If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does \*not\* explicitly account for area (such as CRAM), then both steps should be used. Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).<br><br>Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ |
|---|---|---|---|---|
| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: The mitigation is focused on re-establishment of the aquatic resources | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: There is a slight difference in the functions at the impact and mitigation sites; however, neither site supports highly valuable or rare habitat types. | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: 0<br>PM justification: Uncertainty for in-lieu fee programs has already been factored in to the proposal and the cost per acre. | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |

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| 8 | **Temporal loss**: | Ratio adjustment: 0<br>PM justification: Mitigation would occur prior to impacts. Much of the vegetation at the mitigation site has already begun to be established. | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
|---|---|---|---|---|
| 9 | **Final mitigation ratio(s)**: | Column A:<br>1. Baseline ratio from step 2 or 3 = _1_:_1.5__<br>2. Total adjustments = _0__<br>3. Final ratio: 1 :_1_*_<br><br>Proposed impact (total):<br>0.3 acre<br>1276 linear feet<br>to<br>Resource type: stream<br>Cowardin or HGM: riverine, ephemeral<br>Hydrology: ephemeral_____<br><br>Required mitigation:<br>0.3 acre<br>n/a linear feet<br>of<br>Mitigation type: _re-establishment__<br>Resource type: river<br>Cowardin or HGM: riverine, intermittent<br>Hydrology: intermittent (stream), saturated (wetlands)_____<br><br>Additional PM comments:<br>*The calculated ratio came out as 1:1.5, but without a functional assessment, 1:1 is the minimum ratio allowed under the 2008 mitigation rule. | Column B:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
| 10 | **Final compensatory mitigation requirements:** | PM summary:<br>Although the calculated ratio was 1:1.5 (i.e., 0.67:1), a 1:1 ratio was used, as step 3 was not completed (no functional/condition assessment). The final compensatory mitigation requirement for this impact site is 0.3 acre of re-establishment at the Powers Butte in-lieu fee program site. | | |

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## Checklist Example 5: Impact to fen habitat, one impact site with one mitigation site

**Impact(s):** The applicant proposes to permanently impact 0.26 acre of fen wetland.

**Proposed mitigation:** The applicant has proposed to mitigate through rehabilitation of 0.6 acre of filled fen wetland.

**Method:** The project manager has completed one checklist.

**Results:** After completing the checklist and after discussing the results with the applicant, the project manager has determined the final mitigation ratio to be 5.8:1 for the fen impacts. After consultation with the applicant, the applicant agreed to rehabilitate an additional 0.91 acre of fen wetland for a total of 1.51 acres of rehabilitation within the ski resort area to offset impacts. The project manager then entered the final requirement on the last page of the checklist and added the completed checklist to the administrative record (either as a paper copy in the paper file or as an electronic file in ORM).

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## SPD mitigation ratio setting checklist

<table>
<tr>
<td>1</td>
<td colspan="4">

Date: __6/17/2010____ Corps file no.: __2010-123-JBD__ Project Manager: __Jane B. Doe__

Impact site name: ____Yowza Fen_____ ORM impact resource type: _____non-tidal wetland_____ Hydrology: saturated_____

Impact Cowardin or HGM type: __palustrine___ Impact area (acres): _____0.26_____ Impact distance (linear feet): _____

</td>
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Column A:
Mitigation site name: Ski Area Filled Fen
Mitigation type: _rehabilitation_____
Resource type: non-tidal wetland_____
Cowardin/HGM type: palustrine
Hydrology: saturated _____

</td>
<td>

Column B (optional):
Mitigation site name: _____
Mitigation type: ___
Resource type: _ __
Cowardin/HGM type: _____
Hydrology: _____

</td>
<td>

Column C (optional):
Mitigation site name: _____
Mitigation type: _____
Resource type: _____
Cowardin/HGM type: _____
Hydrology: _____

</td>
</tr>
<tr>
<td>2</td>
<td>

**QUALITATIVE impact-mitigation comparison**:

Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3.

Yes ☐  No ☒

Optional: use Table 1 (page 3).

</td>
<td>

Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).

Starting ratio: 1:1
Ratio adjustment: +2
Baseline ratio: 3:1
PM justification:  impact and mitigation are within the same watershed, habitat type, etc., but rehabilitation would result in partial functional gain compared with total functional loss at impact site, so functional loss would be greater than functional gain.

</td>
<td>

Starting ratio: 1:1
Ratio adjustment: ___
Baseline ratio: __:__
PM justification:

</td>
<td>

Starting ratio: 1:1
Ratio adjustment: ___
Baseline ratio: __:__
PM justification:

</td>
</tr>
</table>

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| 3 | **QUANTITATIVE impact-mitigation comparison**:<br><br>Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead). See example in attachment 12501.2. | Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive. If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does \*not\* explicitly account for area (such as CRAM), then both steps should be used. Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).<br><br>Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ |
|---|---|---|---|---|
| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: +1<br>PM justification: rehabilitation | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: n,n: no difference between impact and mitigation types | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: +0.4<br>PM justification: +0.1 for permittee-responsible mitigation, +0.3 mitigation site difficult-to-replace resource. | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 8 | **Temporal loss**: | Ratio adjustment: +1.4<br>PM justification: Delay of 8 months +0.4, herbaceous, +1. | Ratio adjustment: 0<br>PM justification: | Ratio adjustment:<br>PM justification: |

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| 9 | **Final mitigation ratio(s):** | Column A:<br>1. Baseline ratio from step 2 or 3 = _3_ : _1_<br>2. Total adjustments = _2.8_<br>3. Final ratio: _5.8_ : _1_<br><br>Proposed impact (total):<br>_0.26_ acre<br>___ linear feet<br>to<br>Resource type: non-tidal wetland_____<br>Cowardin or HGM: palustrine<br>Hydrology: saturated _____<br><br>Required mitigation:<br>_1.51__ acre<br>___ linear feet<br>of<br>Mitigation type: _rehabilitation_____<br>Resource type: _____same_____<br>Cowardin or HGM: _____same_____<br>Hydrology: saturated _____<br><br>Additional PM comments: | Column B:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: __<br><br>Required mitigation:<br>__ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: ___<br>Cowardin or HGM:<br>Hydrology: _____<br><br>Additional PM comments: | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
|---|---|---|---|---|
| 10 | **Final compensatory mitigation requirements:** | PM summary: The final compensatory mitigation requirement for this impact site is 1.51 acres. Applicant will rehabilitate 1.51 acres of fen wetland previously filled within the resort area. | | |

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Checklist Example 6: BAMI example: Re-alignment (establishment) of ephemeral streambed, one impact site with one mitigation site

**Impact(s):** The applicant proposes to permanently impact 0.46 acre of ephemeral streambed.

**Proposed mitigation:** The applicant has proposed to mitigate by re-aligning (establishing) ephemeral streambed and replanting using similar species.

**Method:** The project manager has completed one checklist.

**Results:** After completing the checklist, the project manager has determined the final mitigation ratio to be 2.58:1 for the ephemeral streambed impacts. The final compensatory mitigation requirement for this impact site is establishment of 1.19 acre of ephemeral streambed. The project manager then entered the final requirement on the last page of the checklist and added the completed checklist to the administrative record (either as a paper copy in the paper file or as an electronic file in ORM).

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# SPD mitigation ratio setting checklist

| 1 | Date: __6/4/2012____ Corps file no.: __2012-345-IJ__ Project Manager: __Indiana Jones__<br><br>Impact site name: ____Haunted wash_____ ORM impact resource type: _____stream_____ Hydrology: ephemeral_____<br>Impact Cowardin or HGM type: __palustrine___ Impact area (acres): ____0.46_____ Impact distance (linear feet): ___13,579_____ | | |
|---|---|---|---|
| | | Column A:<br>Mitigation site name: Realigned Ditch<br>Mitigation type: _establishment_____<br>Resource type: __stream_<br>Cowardin/HGM type: riverine<br>Hydrology: ephemeral _____ | Column B (optional):<br>Mitigation site name: _____<br>Mitigation type: ___<br>Resource type: _ __<br>Cowardin/HGM type: _____<br>Hydrology: _____ | Column C (optional):<br>Mitigation site name: _____<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin/HGM type: _____<br>Hydrology: _____ |
| 2 | **QUALITATIVE impact-mitigation comparison**:<br><br>Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3.<br><br>Yes ⊠  No ☐<br><br>Optional: use Table 1 (page 3). | Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).<br><br>Starting ratio: 1:1<br>Ratio adjustment: ___<br>Baseline ratio: __:__<br>PM justification: | Starting ratio: 1:1<br>Ratio adjustment: ___<br>Baseline ratio: __:__<br>PM justification: | Starting ratio: 1:1<br>Ratio adjustment: ___<br>Baseline ratio: __:__<br>PM justification: |
| 3 | **QUANTITATIVE  impact-mitigation comparison**:<br><br>Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead).  See example in attachment 12501.2. | Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive.  If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does \*not\* explicitly account for area (such as CRAM), then both steps should be used.  Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).<br><br>Baseline ratio from BAMI procedure (attached): 2.28 : 1 | Baseline ratio from BAMI procedure (attached): __:__ | Baseline ratio from BAMI procedure (attached): __:__ |

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| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
|---|---|---|---|---|
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: establishment | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: n,n: no difference between impact and mitigation types | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: +0.3<br>PM justification: +0.1 permittee responsible; +0.2 mitigation site did not support aquatic resource | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 8 | **Temporal loss**: | Ratio adjustment: 0<br>PM justification: no temporal loss, as mitigation site would be built before impacts and all functions aside from biotic would be replaced. | Ratio adjustment: 0<br>PM justification: | Ratio adjustment:<br>PM justification: |

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| 9 | **Final mitigation ratio(s):** | Column A:<br>1. Baseline ratio from step 2 or 3 = 2.28:1<br>2. Total adjustments = +0.3<br>3. Final ratio: 2.58 : 1<br><br>Proposed impact (total):<br>__0.46_ acre<br>_13,579__ linear feet<br>to<br>Resource type: stream_____<br>Cowardin or HGM: palustrine<br>Hydrology: ephemeral<br><br>Required mitigation:<br>_1.19__ acre<br>_35,034__ linear feet<br>of<br>Mitigation type: _establishment_____<br>Resource type: _____same_____<br>Cowardin or HGM: ____same_____<br>Hydrology: same_____<br><br>Additional PM comments: | Column B:<br>1. Baseline ratio from step 2 or 3<br>= __:__<br>2. Total adjustments = ___<br>3. Final ratio:  __ :__<br><br>Remaining impact: __<br><br>Required mitigation:<br>__ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: ___<br>Cowardin or HGM:<br>Hydrology: _____<br><br>Additional PM comments: | Column C:<br>1. Baseline ratio from step 2 or 3<br>= __:__<br>2. Total adjustments = ___<br>3. Final ratio:  __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
|---|---|---|---|---|
| 10 | **Final compensatory mitigation requirements:** | PM summary: The final compensatory mitigation requirement for this impact site is 1.19 acres.  Applicant will establish 1.19 acre of ephemeral streambed. | | |

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**Attachment 12501.4-SPD - Before-After-Mitigation-Impact (BAMI) procedure       (CRAM example)**

| Functions/conditions | Impact$_{Before}$ | Impact$_{After}$ | Impact$_{delta}$ | Mitigation$_{Before}$ | Mitigation$_{After}$ | Mitigation$_{delta}$ | Current to X/X/2012 |
|---|---|---|---|---|---|---|---|
| **4.1 Buffer and Landscape Context** | | | | | | | |
| 4.1.1 Landscape Connectivity | 3 | 0 | -3 | 3 | 3 | 0 | |
| 4.1.2 Percent of AA with Buffer | 9 | 0 | -9 | 9 | 9 | 0 | |
| 4.1.3 Average Buffer Width | 6 | 0 | -6 | 6 | 6 | 0 | |
| 4.1.4 Buffer Condition | 12 | 0 | -12 | 12 | 12 | 0 | |
| **RAW SCORE** | **12.4** | **0.0** | **-12** | **12.4** | **12.4** | **0** | |
| **FINAL SCORE** | **51.7** | **0.0** | **-52** | **51.7** | **51.7** | **0** | |
| **4.2 Attribute 2: Hydrology** | | | | | | | |
| 4.2.1 Water Source | 9 | 0 | -9 | 0 | 9 | 9 | |
| 4.2.2 Hydroperiod or Channel Stability | 12 | 0 | -12 | 0 | 3 | 3 | |
| 4.2.3 Hydrologic Connectivity | 12 | 0 | -12 | 0 | 12 | 12 | |
| **RAW SCORE** | **33.0** | **0.0** | **-33** | **0.0** | **24.0** | **24** | |
| **FINAL SCORE** | **91.7** | **0.0** | **-92** | **0.0** | **66.7** | **67** | |
| **4.3 Attribute 3: Physical Structure** | | | | | | | |
| 4.3.1 Structural Patch Richness | 3 | 0 | -3 | 0 | 3 | 3 | |
| 4.3.2 Topographic Complexity | 3 | 0 | -3 | 0 | 3 | 3 | |
| **RAW SCORE** | **6.0** | **0.0** | **-6** | **0.0** | **6.0** | **6** | |
| **FINAL SCORE** | **25.0** | **0.0** | **-25** | **0.0** | **25.0** | **25** | |
| **4.4 Attribute 4: Biotic Structure** | | | | | | | |
| 4.4.1 Number of Plant Layers | 6 | 0 | -6 | 0 | 0 | 0 | |
| 4.4.2 Co-Dominant Species | 3 | 0 | -3 | 0 | 0 | 0 | |
| 4.4.3 Percent Invasion | 12 | 0 | -12 | 0 | 0 | 0 | |
| 4.4.4 Interspersion/Zonation | 6 | 0 | -6 | 0 | 0 | 0 | |
| 4.4.5 Vertical Structure | 3 | 0 | -3 | 0 | 0 | 0 | Quotient=ABS(M/I)$_{deltas}$ |
| **RAW SCORE** | **16** | **0** | **-16** | **0** | **0** | **0** | **-25/57** |
| **FINAL SCORE** | **44.5** | **0.0** | **-45** | **0.0** | **0.0** | **0** | Baseline ratio: |
| **OVERALL SCORE** | **57.0** | **0.0** | **-57** | **11.0** | **36.0** | **25** | **2.28  :  1.0** |

## Checklist Example 7: Impact to channelized, soft-bottom stream, one impact site with mitigation proposed at mitigation bank

**Impact(s):** The applicant proposes to permanently impact 2.46 acres of channelized, disturbed, soft-bottom stream reach with intermittent hydrology and sparse vegetation due to on-going maintenance activities (mowing). This reach is flanked on one side by existing commercial and industrial development, and by residential development on the other. The proposed project would construct riprap levees along each side of the channel leaving the channel invert as soft-bottom.

**Proposed mitigation:** The applicant has proposed to mitigate through the purchase of mitigation bank credits (re-establishment of a regionally important riparian corridor). The stream reach where the bank occurs contains mature native riparian vegetation interspersed with less mature vegetation where the bank sponsor has conducted re-establishment through widening of previously channelized banks to restore (in a general sense) the flood plain and planting of native riparian flora. This reach also contains least Bell's vireo, a federally-endangered species of bird.

**Method:** The project manager has completed one checklist using step 2 (<u>qualitative</u> comparison of the impacts (functional loss) and mitigation (functional gain)).

**Results:** After completing the checklist, the project manager has determined the final mitigation ratio to be 1:1 resulting in a requirement for 2.46 acres of riparian stream re-establishment through the proposed mitigation bank. The project manager then entered the final requirement on the last page of the checklist and added the completed checklist to the administrative record (either as a paper copy in the paper file or as an electronic file in ORM).

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# SPD mitigation ratio setting checklist

<table>
<tr><td>1</td><td colspan="4">

Date: __5/31/2012____ Corps file no.: __2010-321-TK__ Project Manager: __ Takeshi Kitano__

Impact site name: ____Highland Stormdrain _____ ORM impact resource type: _____river/stream_____ Hydrology: intermittent_____
Impact Cowardin or HGM type: __palustrine (disturbed) ___ Impact area (acres): ____2.46_____ Impact distance (linear feet): _____
</td></tr>
<tr>
<td></td>
<td></td>
<td>
Column A:
Mitigation site name: San Ramon bank
Mitigation type: _re-establishment_____
Resource type: __river/stream_____
Cowardin/HGM type: palustrine
Hydrology: intermittent _____
</td>
<td>
Column B (optional):
Mitigation site name: _____
Mitigation type: ___
Resource type: _ __
Cowardin/HGM type:
Hydrology: _____
</td>
<td>
Column C (optional):
Mitigation site name: _____
Mitigation type: _____
Resource type: _____
Cowardin/HGM type: _____
Hydrology: _____
</td>
</tr>
<tr>
<td>2</td>
<td>

**QUALITATIVE impact-mitigation comparison**:

Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3.

Yes ☐ No ☒

Optional: use Table 1 (page 3).
</td>
<td>
Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).

Starting ratio: 1:1
Ratio adjustment: -3
Baseline ratio: 1:4
PM justification: Functional gain would be substantially more than the expected functional loss (see attached table).
</td>
<td>
Starting ratio: 1:1
Ratio adjustment: ___
Baseline ratio: __:__
PM justification:
</td>
<td>
Starting ratio: 1:1
Ratio adjustment: ___
Baseline ratio: __:__
PM justification:
</td>
</tr>
<tr>
<td>3</td>
<td>

**QUANTITATIVE  impact-mitigation comparison**:

Use step 3 if a Corps-approved functional/condition assessment been obtained.
Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead).  See example in attachment 12501.2.
</td>
<td>
Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive.  If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does *not* explicitly account for area (such as CRAM), then both steps should be used.  Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).

Baseline ratio from BAMI procedure (attached): __:__
</td>
<td>
Baseline ratio from BAMI procedure (attached): __:__
</td>
<td>
Baseline ratio from BAMI procedure (attached): __:__
</td>
</tr>
</table>

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| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification: ==impact and mitigation would be within the same watershed== | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
|---|---|---|---|---|
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: ==re-establishment== | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: ==n,n: mitigation is in-kind== | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: 0<br>PM justification: ==mitigation bank, uncertainty factors not applicable.== | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 8 | **Temporal loss**: | Ratio adjustment: 0<br>PM justification: ==mitigation bank with most credits released and performance standards met, assuming no delay.== | Ratio adjustment: 0<br>PM justification: | Ratio adjustment:<br>PM justification: |

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| 9 | **Final mitigation ratio(s):** | Column A:<br>1. Baseline ratio from step 2 or 3 = 1:4<br>2. Total adjustments = +0<br>3. Final ratio: 1:1*<br><br>Proposed impact (total):<br>__2.46_ acre<br>___ linear feet<br>to<br>Resource type: __river/stream____<br>Cowardin or HGM: palustrine<br>Hydrology: intermittent _____<br><br>Required mitigation:<br>_2.46__ acre<br>___ linear feet<br>of<br>Mitigation type: __re-establishment____<br>Resource type: _____same_____<br>Cowardin or HGM: ____same_____<br>Hydrology: same _____<br><br>Additional PM comments:<br>*Calculated ratio is 1:4 (or 0.25:1), but without functional assessment, 1:1 is min ratio allowed under 2008 mitigation rule . | Column B:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio:  __ :__<br><br>Remaining impact: __<br><br>Required mitigation:<br>__ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: ___<br>Cowardin or HGM:<br>Hydrology: _____<br><br>Additional PM comments: | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio:  __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
|---|---|---|---|---|
| 10 | **Final compensatory mitigation requirements:** | PM summary: The final compensatory mitigation requirement for this impact site is the purchase of mitigation bank credit for the re-establishment of 2.46 acres of riparian stream habitat (1:1 ratio). | | |

Table 1. Qualitative comparison of functions (functional loss vs. gain):

| Function | Impact site | Mitigation site |
|---|---|---|
| Short- or long-term surface water storage | Small loss | Large gain |
| Subsurface water storage | Small loss | Large gain |
| Moderation groundwater flow/discharge | Small loss | Large gain |
| Dissipation of energy | Small loss | Large gain |
| Cycling of nutrients | Small loss | Large gain |
| Removal of elements and compounds | No loss | Large gain |
| Retention of particulates | No loss | Large gain |
| Export of organic carbon | Moderate loss | Large gain |
| Maintenance of plant and animal communities | Small loss | Large gain |

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**Impact(s):** The applicant proposes to permanently impact 2.46 acres of channelized, disturbed, soft-bottom stream reach with intermittent hydrology and sparse vegetation due to on-going maintenance activities (mowing).  This reach is flanked on one side by existing commercial and industrial development, and by residential development on the other.  The proposed project would construct riprap levees along each side of the channel leaving the channel invert as soft-bottom.

**Proposed mitigation:** The applicant has proposed to mitigate through the purchase of mitigation bank credits (re-establishment of a regionally important riparian corridor).  The stream reach where the bank occurs contains mature native riparian vegetation interspersed with less mature vegetation where the bank sponsor has conducted re-establishment through widening of previously channelized banks to restore (in a general sense) the flood plain and planting of native riparian flora.  This reach also contains least Bell's vireo, a federally-endangered species of bird.

**Method:** After considering the 1:1 mitigation ratio requirement from the previous example, the applicant decided to conduct a functional/condition assessment for the project.  The project manager then completed a new checklist using step 3 (quantitative comparison of the impacts (functional loss) and mitigation (functional gain)).

**Results:** After completing the new checklist, the project manager has determined the final mitigation ratio to be 1:4.1 (or 0.24:1) resulting in a requirement for 0.59 acre of riparian stream re-establishment through the proposed mitigation bank.  The project manager then entered the final requirement on the last page of the checklist and added the completed checklist to the administrative record (either as a paper copy in the paper file or as an electronic file in ORM).

# SPD mitigation ratio setting checklist

<table>
<tr>
<td>1</td>
<td colspan="4">
Date: __5/31/2012____ Corps file no.: __2010-321-TK__ Project Manager: __Takeshi Kitano__

Impact site name: ____Highland Stormdrain_____ ORM impact resource type: _____river/stream_____ Hydrology: intermittent _____<br>
Impact Cowardin or HGM type: __palustrine (disturbed) ___ Impact area (acres): _____2.46_____ Impact distance (linear feet): _____
</td>
</tr>
<tr>
<td></td>
<td></td>
<td>
Column A:<br>
Mitigation site name: San Ramon bank<br>
Mitigation type: _re-establishment_____<br>
Resource type: __river/stream_____<br>
Cowardin/HGM type: palustrine<br>
Hydrology: intermittent _____
</td>
<td>
Column B (optional):<br>
Mitigation site name: _____<br>
Mitigation type: ___<br>
Resource type: _ __<br>
Cowardin/HGM type:<br>
Hydrology: _____
</td>
<td>
Column C (optional):<br>
Mitigation site name: _____<br>
Mitigation type: _____<br>
Resource type: _____<br>
Cowardin/HGM type: _____<br>
Hydrology: _____
</td>
</tr>
<tr>
<td>2</td>
<td>
**QUALITATIVE impact-mitigation comparison:**

Has a Corps-approved functional/condition assessment been obtained?  If not, complete step 2; otherwise, complete step 3.

Yes ☒  No ☐

Optional: use Table 1 (page 3).
</td>
<td>
Note: steps 2 and 3 are mutually exclusive. If step 2 is used, then complete the rest of the checklist (steps 4-10).

Starting ratio: 1:1<br>
Ratio adjustment: ___<br>
Baseline ratio: __:__<br>
PM justification:
</td>
<td>
Starting ratio: 1:1<br>
Ratio adjustment: ___<br>
Baseline ratio: __:__<br>
PM justification:
</td>
<td>
Starting ratio: 1:1<br>
Ratio adjustment: ___<br>
Baseline ratio: __:__<br>
PM justification:
</td>
</tr>
<tr>
<td>3</td>
<td>
**QUANTITATIVE  impact-mitigation comparison:**

Use step 3 if a Corps-approved functional/condition assessment been obtained.<br>
Use Before-After-Mitigation-Impact (BAMI) spreadsheet (attachment 12501.4) (if a district-approved functional/condition method is not available, use step 2 instead).  See example in attachment 12501.2.
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Note: steps 2 and 3 are mutually exclusive. If step 3 is used, steps 3 and 5 may also be mutually exclusive.  If a functional/ condition assessment method is used that explicitly accounts for area (such as HGM), steps 3 and 5 are mutually exclusive; however, if a method is used that does *not* explicitly account for area (such as CRAM), then both steps should be used.  Complete the rest of the checklist (steps 4-10 or steps 4 and 6-10, as appropriate).

Baseline ratio from BAMI procedure (attached): 1:4.1
</td>
<td>
Baseline ratio from BAMI procedure (attached): __:__
</td>
<td>
Baseline ratio from BAMI procedure (attached): __:__
</td>
</tr>
</table>

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| | | | | |
|---|---|---|---|---|
| 4 | **Mitigation site location**: | Ratio adjustment: 0<br>PM justification: impact and mitigation would be within the same watershed | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 5 | **Net loss of aquatic resource surface area**: | Ratio adjustment: 0<br>PM justification: re-establishment | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 6 | **Type conversion:** | Ratio adjustment: 0<br>PM justification: n,n: mitigation is in-kind | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 7 | **Risk and uncertainty**: | Ratio adjustment: 0<br>PM justification: mitigation bank, uncertainty factors not applicable. | Ratio adjustment:<br>PM justification: | Ratio adjustment:<br>PM justification: |
| 8 | **Temporal loss**: | Ratio adjustment: 0<br>PM justification: mitigation bank with most credits released and performance standards met, assuming no delay. | Ratio adjustment: 0<br>PM justification: | Ratio adjustment:<br>PM justification: |

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| 9 | **Final mitigation ratio(s):** | Column A:<br>1. Baseline ratio from step 2 or 3 = 1:4.1<br>2. Total adjustments = 0<br>3. Final ratio: 1:4.1 (or 0.24:1)<br><br>Proposed impact (total):<br>__2.46_ acre<br>___ linear feet<br>to<br>Resource type: __river/stream____<br>Cowardin or HGM: palustrine<br>Hydrology: intermittent _____<br><br>Required mitigation:<br>_0.59__ acre<br>___ linear feet<br>of<br>Mitigation type: _re-establishment____<br>Resource type: _____same_____<br>Cowardin or HGM: ____same_____<br>Hydrology: same_____<br><br>Additional PM comments: | Column B:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: __<br><br>Required mitigation:<br>__ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: ___<br>Cowardin or HGM:<br>Hydrology: _____<br><br>Additional PM comments: | Column C:<br>1. Baseline ratio from step 2 or 3 = __:__<br>2. Total adjustments = ___<br>3. Final ratio: __ :__<br><br>Remaining impact: _____<br><br>Required mitigation:<br>___ acre<br>___ linear feet<br>of<br>Mitigation type: _____<br>Resource type: _____<br>Cowardin or HGM: _____<br>Hydrology: _____<br><br>Additional PM comments: |
| 10 | **Final compensatory mitigation requirements:** | PM summary: The final compensatory mitigation requirement for this impact site is the purchase of mitigation bank credit for the re-establishment of 0.59 acre of riparian stream habitat. | | |

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**Attachment 12501.4-SPD - Before-After-Mitigation-Impact (BAMI) procedure**         **(CRAM example)**

| Functions/conditions | Impact$_{Before}$ | Impact$_{After}$ | Impact$_{delta}$ | Mitigation$_{Before}$ | Mitigation$_{After}$ | Mitigation$_{delta}$ | Current to X/X/2012 |
|---|---|---|---|---|---|---|---|
| **4.1 Buffer and Landscape Context** | | | | | | | |
| 4.1.1 Landscape Connectivity | 3 | 3 | 0 | 9 | 9 | 0 | |
| 4.1.2 Percent of AA with Buffer | 3 | 3 | 0 | 9 | 9 | 0 | |
| 4.1.3 Average Buffer Width | 3 | 3 | 0 | 9 | 9 | 0 | |
| 4.1.4 Buffer Condition | 3 | 3 | 0 | 9 | 9 | 0 | |
| **RAW SCORE** | **6.0** | **6.0** | **0** | **18.0** | **18.0** | **0** | |
| **FINAL SCORE** | **25.0** | **25.0** | **0** | **75.0** | **75.0** | **0** | |
| **4.2 Attribute 2: Hydrology** | | | | | | | |
| 4.2.1 Water Source | 6 | 6 | 0 | 9 | 9 | 0 | |
| 4.2.2 Hydroperiod or Channel Stability | 6 | 6 | 0 | 9 | 9 | 0 | |
| 4.2.3 Hydrologic Connectivity | 3 | 3 | 0 | 3 | 9 | 6 | |
| **RAW SCORE** | **15.0** | **15.0** | **0** | **21.0** | **27.0** | **6** | |
| **FINAL SCORE** | **41.7** | **41.7** | **0** | **58.4** | **75.0** | **17** | |
| **4.3 Attribute 3: Physical Structure** | | | | | | | |
| 4.3.1 Structural Patch Richness | 6 | 3 | -3 | 0 | 9 | 9 | |
| 4.3.2 Topographic Complexity | 3 | 3 | 0 | 0 | 12 | 12 | |
| **RAW SCORE** | **9.0** | **6.0** | **-3** | **0.0** | **21.0** | **21** | |
| **FINAL SCORE** | **37.5** | **25.0** | **-13** | **0.0** | **87.5** | **88** | |
| **4.4 Attribute 4: Biotic Structure** | | | | | | | |
| 4.4.1 Number of Plant Layers | 6 | 3 | -3 | 9 | 9 | 0 | |
| 4.4.2 Co-Dominant Species | 6 | 3 | -3 | 12 | 12 | 0 | |
| 4.4.3 Percent Invasion | 6 | 3 | -3 | 9 | 9 | 0 | |
| 4.4.4 Interspersion/Zonation | 6 | 3 | -3 | 6 | 12 | 6 | |
| 4.4.5 Vertical Structure | 3 | 3 | 0 | 6 | 12 | 6 | Quotient=ABS(M/I)$_{deltas}$ |
| **RAW SCORE** | **15** | **9** | **-6** | **22** | **34** | **12** | **4  1/8** |
| **FINAL SCORE** | **41.7** | **25.0** | **-17** | **61.2** | **94.5** | **33** | Baseline ratio: |
| **OVERALL SCORE** | **38.0** | **30.0** | **-8** | **51.0** | **84.0** | **33** | **1  :  4.125** |

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