

Cost Effectiveness Incremental Cost Analysis

A cost-effectiveness incremental cost analysis (CE/ICA) is completed to compare the alternatives under consideration for the project site. The purpose of the analysis is to evaluate the effectiveness and efficiency of the site alternatives at producing environmental outputs, so the costs of the alternatives and the expected environmental outputs are inputs for CE/ICA. Since the No Action Alternative was assumed to continue operation of the existing Intake structure, a comparison of the average annual costs of the preferred alternative to the average annual benefits from irrigation was not completed. Instead the CE/ICA focuses on fish passage and habitat as expressed by HU's. Guidance on completing CE/ICA is in the Institute for Water Resource (IWR) Report #95-R-1, USACE, May 1995.

As described in previous sections, three plan alternatives are considered: the No Action Alternative, the Rock Ramp Alternative and the Bypass Channel Alternative. As shown in Table 1, different options exist for how management measures and scales are combined to construct either the Rock Ramp Alternative or the Bypass Channel Alternative. For CE/ICA, the various combinations of management measures and scales are referred to as 'plan alternatives' rather than just 'alternatives.' There are 12 plan alternatives associated with the Rock Ramp Alternative, and four plan alternatives associated with the Bypass Channel Alternative.

The following section provides a summary of the benefits used to evaluate environmental output and is followed by a section describing costs. Next the results of the CE/ICA are provided, including an evaluation of the effect of adaptive management (AM) on the CE/ICA results.

Benefits

The Fish Passage Connectivity Index (FPCI) is a simple arithmetic index that was originally developed to evaluate ecosystem outputs of plan alternatives for fish passage improvements at locks and dams on the Upper Mississippi River System. This model, with slight adjustments, is used to compare the benefits of plan alternatives for providing fish passage at the Intake Dam. Habitat units (HU's) are calculated by multiplying the FPCI by the total acres of available preferred habitat upstream of the Intake Dam, by species. A detailed description of the calculation of HU's is provided as an attachment to this analysis.

Table 1 shows the estimated HU's by plan alternative, organized by Rock Ramp Plan alternatives and Bypass Channel Plan alternatives. Refer to Appendix A1 Plan Formulation, for more details on the plan alternative configurations. The average annual net HU's are the values used for CE/ICA, and are net of the habitat units estimated for the No Action Plan Alternative.

Table 1. Habitat Units by Alternative Plan

| Plan alternatives | Average Annual Habit Units | Average Annual Net Habitat Units |
|---|-----------------------------------|---|
| No Action Plan Alternative | 978 | 0 |
| Rock Ramp Plan Alternatives | | |
| Original Rock Ramp with Crest 1 and Cofferd Dam 1 | 8,627 | 7,649 |
| Original Rock Ramp with Crest 1 and Cofferd Dam 2 | 8,627 | 7,649 |
| Original Rock Ramp with Crest 1 and Cofferd Dam 3 | 8,627 | 7,649 |
| *Original Rock Ramp with Crest 2 | 8,627 | 7,649 |
| Shortened Rock Ramp with Crest 1 and Cofferd Dam 1 | 5,657 | 4,679 |
| Shortened Rock Ramp with Crest 1 and Cofferd Dam 2 | 5,657 | 4,679 |
| Shortened Rock Ramp with Crest 1 and Cofferd Dam 3 | 5,657 | 4,679 |
| Shortened Rock Ramp with Crest 2 | 5,657 | 4,679 |
| Double Slope Rock Ramp with Crest 1 and Cofferd Dam 1 | 3,126 | 2,148 |
| Double Slope Rock Ramp with Crest 1 and Cofferd Dam 2 | 3,126 | 2,148 |
| Double Slope Rock Ramp with Crest 1 and Cofferd Dam 3 | 3,126 | 2,148 |
| Double Slope Rock Ramp with Crest 2 | 3,126 | 2,148 |
| Bypass Channel Plan Alternatives | | |
| Bypass Channel 15% Diversion, Weir 1 | 8,447 | 7,469 |
| *Bypass Channel 15% Diversion, Weir 2 | 8,447 | 7,469 |
| Bypass Channel 10% Diversion, Weir 1 | 7,087 | 6,109 |
| Bypass Channel 10% Diversion, Weir 2 | 7,087 | 6,109 |

*Alternatives ultimately carried forward in EA

As described in the Social and Economic Existing Conditions and Social and Economic Impacts sections of the report, the Rock Ramp Alternative and Bypass Channel Alternative are part of a larger project aimed at ensuring continued irrigation of agricultural lands from the Yellowstone Intake Dam while avoiding jeopardy of ESA listed species. It's estimated that approximately 58,000 acres are irrigated with net annual revenues of \$3.25 million (2009 dollars). Additionally, the Social and Economic Impacts sections evaluated regional economic impacts to the local economy due to increased expenditures stemming from the construction of the project. Therefore the benefits of this project include HU's, along with continued agricultural production, and the regional economic impacts that would occur during project construction.

Costs

Based upon the engineering designs for the various alternative configurations, project cost estimates were developed. Cost estimates were also calculated for interest during construction (IDC), operations and maintenance (O&M), monitoring, and AM features. Project cost estimates for two alternatives, a bypass alternative and a rock ramp alternative, were reviewed by the Cost Engineering Center of Expertise (Cost PCX). Based upon the updated cost estimates for the bypass alternative and the rock ramp alternative reviewed by the Cost PCX, a percentage adjustment was made to all bypass alternatives to adjust the cost of the alternatives in a manner similar to the reviewed bypass alternative,

and likewise an adjustment was made to all other rock ramp alternatives. The adjustment was a 7.34% increase for rock ramp alternatives and 27.05% for bypass alternatives.

Table 2 shows the total construction costs, Interest During Construction (IDC) cost, and total project costs, as well as average annual costs for O&M, average annual monitoring costs and amortized average annual costs. IDC represents the opportunity cost of capital during the construction period. The total project cost, or investment cost is the sum of construction costs plus interest during construction. Average annual O&M costs were estimated based upon the management measures and scales that comprise the plan alternatives. Monitoring is anticipated for the project for the first 8 years only, and varies between \$75,000 per year to \$425,000 per year, with an annual average of \$250,000 for the Rock Ramp Plan Alternative and \$255,000 for the Bypass Channel Plan Alternative. The average annual cost includes the total project cost amortized over a 50-year period of analysis plus O&M and monitoring. O&M for both the bypass channel alternatives and the rock ramp alternatives include a combination of concrete weir repair, bank repairs, and one to five percent of rock replacement annually.

Table 2. Costs by Plan Alternatives

| Plan Alternatives | Total Construction Cost | IDC (2 years, at 4.0%) | Total Project Cost | Average Annual O&M Cost | Average Annual Monitoring Cost (first 8 years only) | Average Annual Cost (amortized over 50 years, 4.0%) |
|--|-------------------------|------------------------|--------------------|-------------------------|---|---|
| Rock Ramp Plan Alternatives | | | | | | |
| Original Rock Ramp with Crest 1 and Cofferdam 1 | \$91,893,035 | \$3,828,876 | \$95,721,912 | \$282,028 | \$250,000 | \$4,724,645 |
| Original Rock Ramp with Crest 1 and Cofferdam 2 | \$93,537,038 | \$3,897,377 | \$97,434,415 | \$282,028 | \$250,000 | \$4,804,125 |
| Original Rock Ramp with Crest 1 and Cofferdam 3 | \$85,468,426 | \$3,561,184 | \$89,029,610 | \$282,028 | \$250,000 | \$4,414,044 |
| *Original Rock Ramp with Crest 2 | \$77,088,181 | \$3,212,008 | \$80,300,189 | \$282,028 | \$250,000 | \$4,008,897 |
| Shortened Rock Ramp with Crest 1 and Cofferdam 1 | \$77,387,879 | \$3,224,495 | \$80,612,374 | \$248,128 | \$250,000 | \$3,989,486 |
| Shortened Rock Ramp with Crest 1 and Cofferdam 2 | \$79,031,881 | \$3,292,995 | \$82,324,876 | \$248,128 | \$250,000 | \$4,068,966 |
| Shortened Rock Ramp with Crest 1 and Cofferdam 3 | \$70,963,269 | \$2,956,803 | \$73,920,072 | \$248,128 | \$250,000 | \$3,678,884 |
| Shortened Rock Ramp with Crest 2 | \$62,583,024 | \$2,607,626 | \$65,190,650 | \$248,128 | \$250,000 | \$3,273,737 |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 1 | \$70,400,022 | \$2,933,334 | \$73,333,356 | \$231,028 | \$250,000 | \$3,634,554 |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 2 | \$72,044,024 | \$3,001,834 | \$75,045,858 | \$231,028 | \$250,000 | \$3,714,034 |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 3 | \$63,975,412 | \$2,665,642 | \$66,641,054 | \$231,028 | \$250,000 | \$3,323,953 |
| Double Slope Rock Ramp with Crest 2 | \$55,595,167 | \$2,316,465 | \$57,911,633 | \$231,028 | \$250,000 | \$2,918,805 |
| Bypass Channel Plan Alternatives without Adaptive Management | | | | | | |
| Bypass Channel 15% Diversion, Weir 1 | \$53,927,667 | \$2,246,986 | \$56,174,654 | \$220,216 | \$255,000 | \$2,827,377 |
| *Bypass Channel 15% Diversion, Weir 2 | \$52,198,027 | \$2,174,918 | \$54,372,945 | \$220,216 | \$255,000 | \$2,743,757 |
| Bypass Channel 10% Diversion, Weir 1 | \$50,915,340 | \$2,121,473 | \$53,036,813 | \$217,372 | \$255,000 | \$2,678,901 |
| Bypass Channel 10% Diversion, Weir 2 | \$49,185,700 | \$2,049,404 | \$51,235,104 | \$217,372 | \$255,000 | \$2,595,280 |

* Alternatives ultimately carried forward in EA

Cost-Effectiveness/Incremental Cost Analysis (CE/ICA)

Average annual HU's and the average annual costs are the inputs into IWR Planning Suite 2.0.6.0. CE/ICA results in the identification of cost-effective plan alternatives. A cost-effective plan alternative is defined as one where no other plan alternative can achieve the same level of output at a lower cost, or a greater level of output at the same or less cost. A sub-set of cost-effective plan alternatives are identified as 'best buy plans.' Best buy plans are cost-effective plan alternatives that provide the greatest increase in environmental output for the least increase in cost per HU. The plan alternative with the lowest incremental costs per unit of output of all plans is therefore considered the first best buy plan. After the first best buy plan is identified, all larger cost-effective plan alternatives are compared to the first best buy plan in terms of increases in (increments of) cost and increases in (increments of) output. The plan alternative with the lowest incremental cost per unit of output (for all cost-effective plans larger than the first best buy plan) is the second best buy plan. This process of comparison continues until all best buy plan alternatives are identified.

The results of the cost-effective analysis completed for the plan alternatives are shown in Figure 1 and Table 3. The figure shows that there are four cost-effective plan alternatives within the array of 17 plan alternatives, and three of these four plan alternatives are best buy plan alternatives. The first best buy alternative identified in CE/ICA is always the No Action Plan Alternative. The second best buy alternative is the Bypass Channel Plan Alternative with 15% diversion and weir design two. The third best buy alternative is the Rock Ramp Plan Alternative with the original ramp design and crest design two. The Bypass Channel Plan Alternative with 10% diversion and weir design two is a cost-effective alternative, but because the Bypass Channel Plan Alternative with 15% diversion and weir design two has a lower cost per habit unit output it is not a best buy plan alternative.

Figure 1. CE/ICA Results for Yellowstone Intake Plan Alternatives

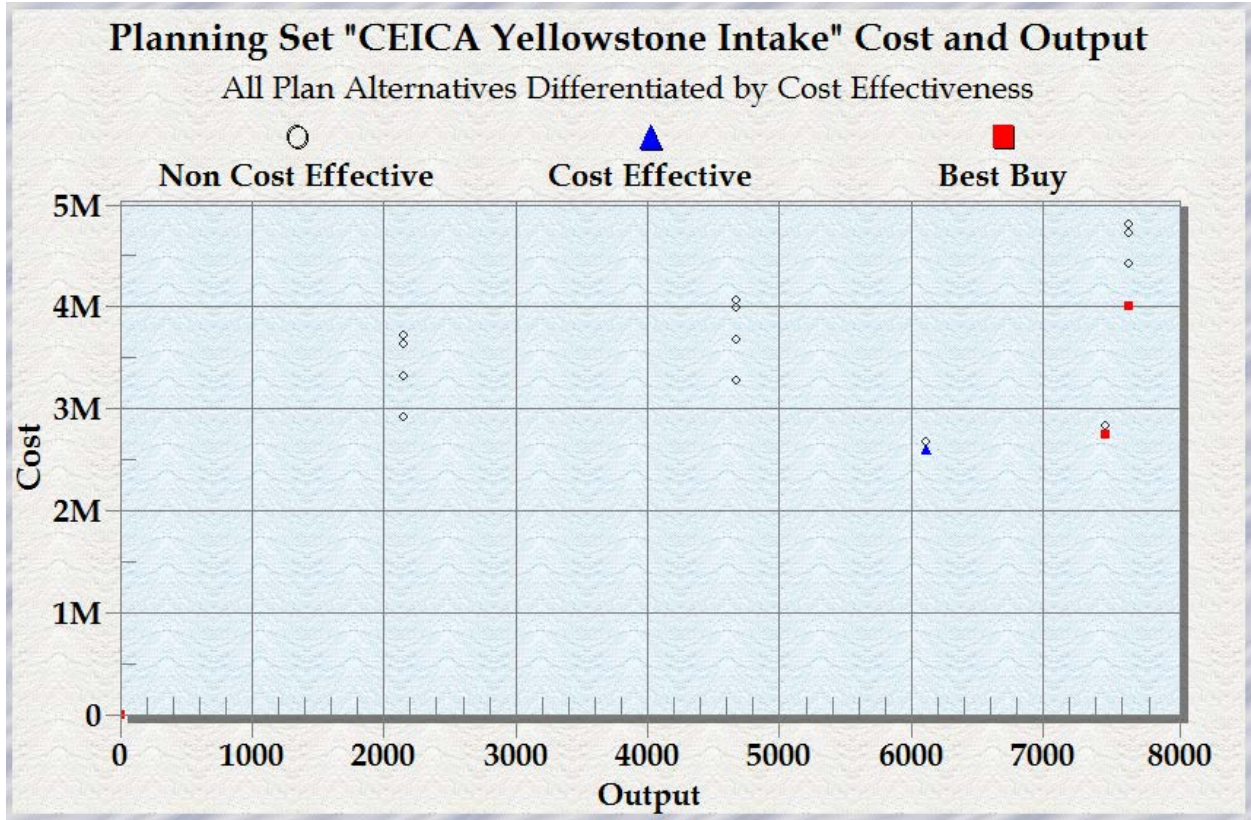


Table 3. CE/ICA Results for Yellowstone Intake Plan Alternatives

| Plan Alternatives | Average Annual Cost | Output (HU's) | Cost Effective |
|---|----------------------------|----------------------|-----------------------|
| No Action Plan | \$0 | 0 | Best Buy |
| Double Slope Rock Ramp with Crest 2 | \$2,918,805 | 2,148 | No |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 3 | \$3,323,953 | 2,148 | No |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 1 | \$3,634,554 | 2,148 | No |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 2 | \$3,714,034 | 2,148 | No |
| Shortened Rock Ramp with Crest 2 | \$3,273,737 | 4,679 | No |
| Shortened Rock Ramp with Crest 1 and Cofferdam 3 | \$3,678,884 | 4,679 | No |
| Shortened Rock Ramp with Crest 1 and Cofferdam 1 | \$3,989,486 | 4,679 | No |
| Shortened Rock Ramp with Crest 1 and Cofferdam 2 | \$4,068,966 | 4,679 | No |
| Bypass Channel 10% Diversion, Weir 2 | \$2,595,280 | 6,109 | Yes |
| Bypass Channel 10% Diversion, Weir 1 | \$2,678,901 | 6,109 | No |
| Bypass Channel 15% Diversion, Weir 2 | \$2,743,757 | 7,469 | Best Buy |
| Bypass Channel 15% Diversion, Weir 1 | \$2,827,377 | 7,469 | No |
| Original Rock Ramp with Crest 2 | \$4,008,897 | 7,649 | Best Buy |
| Original Rock Ramp with Crest 1 and Cofferdam 3 | \$4,414,044 | 7,649 | No |
| Original Rock Ramp with Crest 1 and Cofferdam 1 | \$4,724,645 | 7,649 | No |
| Original Rock Ramp with Crest 1 and Cofferdam 2 | \$4,804,125 | 7,649 | No |

Incremental cost analysis was completed on the two plan alternatives identified as best buys through the cost-effective analysis. The first increment is the best buy plan alternative for the Bypass Channel Plan Alternative and the second increment is the best buy plan alternative for the Rock Ramp Plan Alternative. As shown in Figure 2 and Table 4, there is a steep increase in the cost per HU between the Bypass Channel Plan Alternative and the Rock Ramp Plan Alternative. The Bypass Channel Plan Alternative provides 7,469 HU's at an incremental cost per HU of \$367, while the Rock Ramp Plan Alternative provides an additional 180 HU's (beyond the 7,469 HU's) at an incremental cost per HU of \$7,029. Based upon the incremental cost analysis, along with consideration of the overall cost of the plan alternatives, the recommended plan for implementation is the Bypass Channel Plan Alternative with 15% diversion and weir option two. The total project cost for the Rock Ramp Plan Alternative with the original rock ramp and crest option 2 is \$77,088,181, while the total project cost for the Bypass Channel Plan Alternative with a 15% diversion and weir option 2 is \$52,198,027.

Figure 2. Incremental Cost Analysis for Best Buy Plan Alternatives

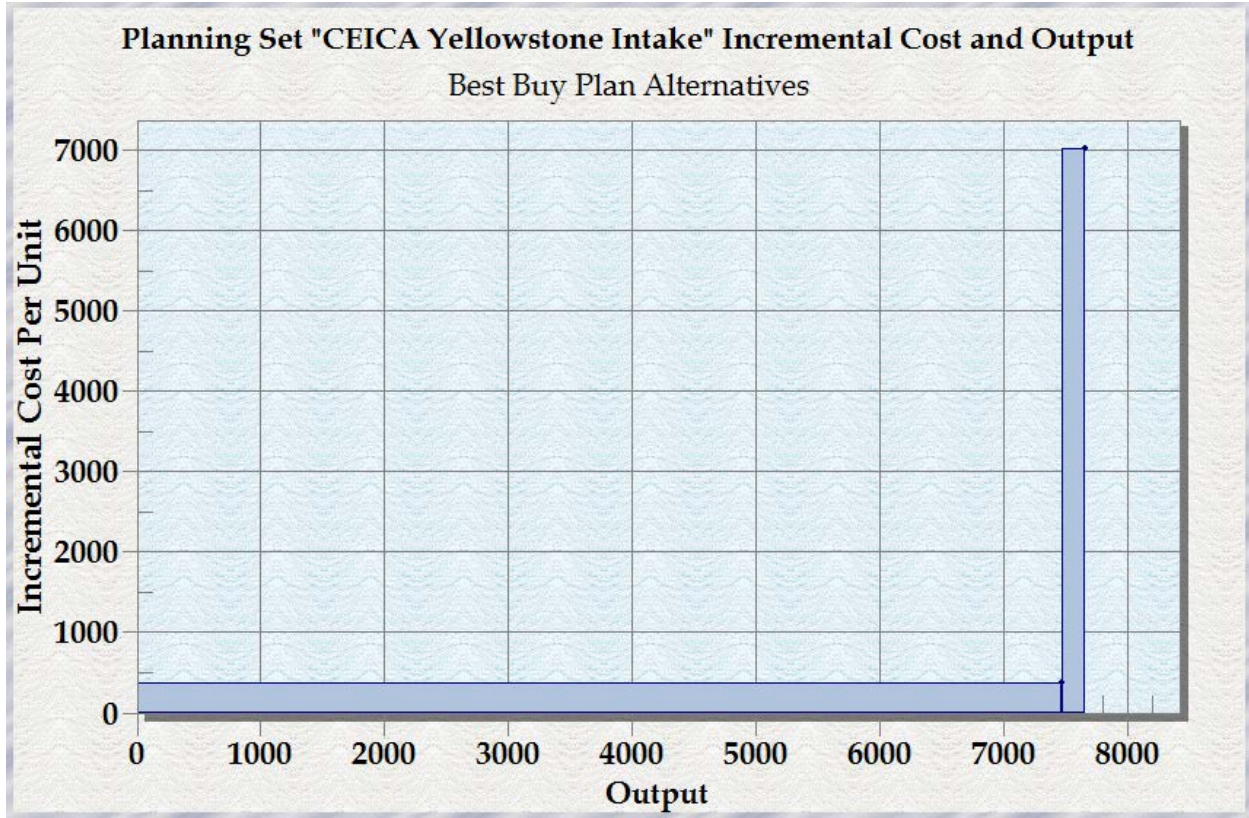


Table 4. Incremental Cost Analysis Results

| Alternative Plan | Output (HU's) | Average Annual Cost (\$1,000) | Average Cost (\$1,000/HU) | Incremental Cost | Incremental Output (HU's) | Incremental Cost per Output |
|--------------------------------------|---------------|-------------------------------|---------------------------|------------------|---------------------------|-----------------------------|
| No Action | 0 | 0 | | | | |
| Bypass Channel 15% Diversion, Weir 2 | 7,469 | \$2,743,757 | \$367 | \$2,743,757 | 7469 | \$367 |
| Original Rock Ramp with Crest 2 | 7,649 | \$4,008,897 | \$524 | \$1,265,140 | 180 | \$7,029 |

CE/ICA with Bypass Channel Adaptive Management

As mentioned previously, monitoring of the project is anticipated. Monitoring will be conducted to determine if the project is functioning as expected and to see if any adjustments are needed. If necessary, changes to structures may be required to ensure that the desired project outcome is achieved. These changes are described in the AM Plan in Appendix J.

In order to evaluate the sensitivity of the CE/ICA results to the potential adoption of AM actions, the CE/ICA was recalculated with AM measures added to the Bypass Channel Plan Alternatives only. AM was added to these plans only to see how it would change the CE/ICA results in relation to the Rock Ramp Plan Alternatives with no AM. It should be noted, that AM features may also be needed,

therefore a Rock Ramp Alternative Plan was constructed, but since the Rock Ramp Alternative Plan is not the preferred alternative, this analysis focused on verifying whether or not a Bypass Channel Alternative Plan would remain the preferred alternative even if AM features are required, rather than evaluating how all alternatives change with AM.

Monitoring of fish species, particularly pallid sturgeon, will be conducted for 8 years after construction is completed. Depending upon the monitoring results, potential AM measures may need to be completed to ensure the Bypass Channel Alternative is operating as expected. The AM measures and scales currently under consideration along with their associated costs are shown in Table 5. One or all of the options may be required, so for the purposes of the CE/ICA the total AM cost is included.

Table 5. Bypass Channel Adaptive Management

| Adaptive Management Measures and Scales | Cost |
|--|-------------|
| Option 1 - Flow Augmentation Structure | \$4,011,407 |
| Option 2 - Rock Manipulation 1,000 ton | \$102,223 |
| Option 3 - Rock Manipulation 10,000 ton | \$271,802 |
| Option 4 - Riprap Replacement | \$256,028 |
| Total | \$4,641,460 |

Table 6 shows the cost of the Bypass Channel Alternative Plans with the AM cost included. Since AM options would be added to the project, based upon monitoring results, it is assumed that the AM options would be constructed during year five of the project. This additional cost for year five has been factored in to the annual average cost amortized over the 50-year period of analysis, increasing the expected average annual cost for all Bypass Channel Alternative Plans by approximately \$170,271 annually, over their average annual cost without AM features.

The results of the cost-effective analysis completed including AM for the Bypass Channel Plan Alternatives are shown in Figure 3 and Table 7. Similar to previous results, the figure shows there are four cost-effective plan alternatives, with three of these four plan alternatives identified as a best buy alternative. The first best buy plan alternative identified in CE/ICA is always the No Action Plan Alternative. The second best buy plan alternative is the Bypass Channel Plan Alternative with 15% diversion and weir design two and AM options included. The third best buy plan alternative is the Rock Ramp Plan Alternative with the original ramp design and crest design two. The Bypass Channel Plan Alternative with 10% diversion, weir design two with AM, is a cost-effective alternative, but because the Bypass Channel Plan Alternative with 15% diversion and weir design two with AM has a lower cost per habit unit output it is not a best buy alternative.

Table 6. Costs by Alternative with Adaptive Management

| Plan Alternatives | Total Construction Cost | Interest During Construction (2 years at 4 percent) | Total Project Cost | AM Cost | Average Annual O&M Costs | Average Annual Monitoring (first 8 years only) | Annual Average Costs (amortized over 50 years, 4.0%) |
|--|--------------------------------|--|---------------------------|----------------|-------------------------------------|---|---|
| Bypass Channel Plan alternatives with AM | | | | | | | |
| Bypass Channel 15% Diversion, Weir 1 with AM | \$58,381,631 | \$2,432,568 | \$60,814,199 | \$4,453,963 | \$220,216 | \$255,000 | \$2,997,648 |
| Bypass Channel 15% Diversion, Weir 2 with AM | \$56,651,990 | \$2,360,500 | \$59,012,490 | \$4,453,963 | \$220,216 | \$255,000 | \$2,914,028 |
| Bypass Channel 10% Diversion, Weir 1 with AM | \$55,369,304 | \$2,307,054 | \$57,676,358 | \$4,453,963 | \$217,372 | \$255,000 | \$2,849,280 |
| Bypass Channel 10% Diversion, Weir 2 with AM | \$53,639,663 | \$2,234,986 | \$55,874,649 | \$4,453,963 | \$217,372 | \$255,000 | \$2,765,660 |

Figure 3. CEICA Results for Yellowstone Intake Plan Alternatives with Bypass Channel Plan Alternatives including Adaptive Management

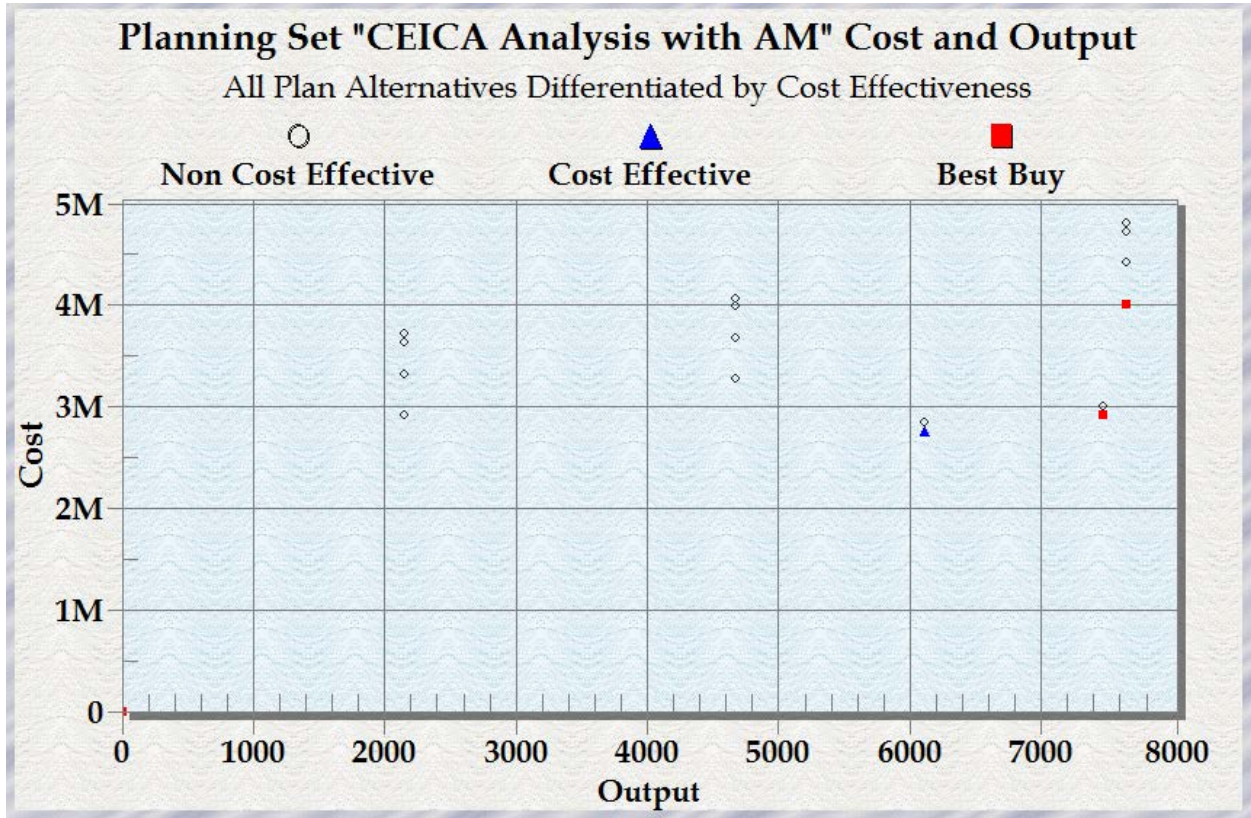


Table 7. CEICA Results for Yellowstone Intake Plan Alternatives, Bypass Channel Plan Alternatives with AM

| Name | Average Annual Cost | Average Annual Net Output | Cost Effective |
|---|---------------------|---------------------------|----------------|
| No Action Plan | \$0 | - | Best Buy |
| Double Slope Rock Ramp with Crest 2 | \$2,918,805 | 2,148 | No |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 3 | \$3,323,953 | 2,148 | No |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 1 | \$3,634,554 | 2,148 | No |
| Double Slope Rock Ramp with Crest 1 and Cofferdam 2 | \$3,714,034 | 2,148 | No |
| Shortened Rock Ramp with Crest 2 | \$3,273,737 | 4,679 | No |
| Shortened Rock Ramp with Crest 1 and Cofferdam 3 | \$3,678,884 | 4,679 | No |
| Shortened Rock Ramp with Crest 1 and Cofferdam 1 | \$3,989,486 | 4,679 | No |
| Shortened Rock Ramp with Crest 1 and Cofferdam 2 | \$4,068,966 | 4,679 | No |
| Bypass Channel 10% Diversion, Weir 2 with AM | \$2,765,660 | 6,109 | Yes |
| Bypass Channel 10% Diversion, Weir 1 with AM | \$2,849,280 | 6,109 | No |
| Bypass Channel 15% Diversion, Weir 2 with AM | \$2,914,028 | 7,469 | Best Buy |
| Bypass Channel 15% Diversion, Weir 1 with AM | \$2,997,648 | 7,469 | No |
| Original Rock Ramp with Crest 2 | \$4,008,897 | 7,649 | Best Buy |
| Original Rock Ramp with Crest 1 and Cofferdam 3 | \$4,414,044 | 7,649 | No |
| Original Rock Ramp with Crest 1 and Cofferdam 1 | \$4,724,645 | 7,649 | No |
| Original Rock Ramp with Crest 1 and Cofferdam 2 | \$4,804,125 | 7,649 | No |

Similar to the previous incremental cost analysis, incremental cost analysis was completed on the two plan alternatives identified as best buys through the cost-effective analysis. The first increment is the best buy plan alternative for the Bypass Channel Plan Alternative with AM and the second increment is the best buy alternative for the Rock Ramp Plan Alternative (without AM). As shown in Figure 4 and Table 8, there is still a steep increase in the cost per HU between the Bypass Channel Plan Alternative with AM and the Rock Ramp Plan Alternative. The Bypass Channel Plan Alternative with AM provides 7,469 HU's at per unit cost of \$390, while the Rock Ramp Plan Alternative provides an additional 180 HU's (beyond the 7,469 HU's) at a per unit cost of \$6,083. The original incremental cost analysis reported similar results, with the first 7,469 HU's with the Bypass Channel Plan Alternative (without AM) costing of \$367, and the Rock Ramp Plan Alternative providing an additional 180 HU's with a per unit cost of \$7,029. Thus, even with AM, a similar relationship exists between the two best buy plan alternatives, with the Rock Ramp Plan Alternative requiring a steep increase in expenditures in order to achieve a small increase in HU outputs.

Figure 4. Incremental Cost Analysis for Best Buy Plan Alternatives, Bypass Channel Plan Alternatives with AM

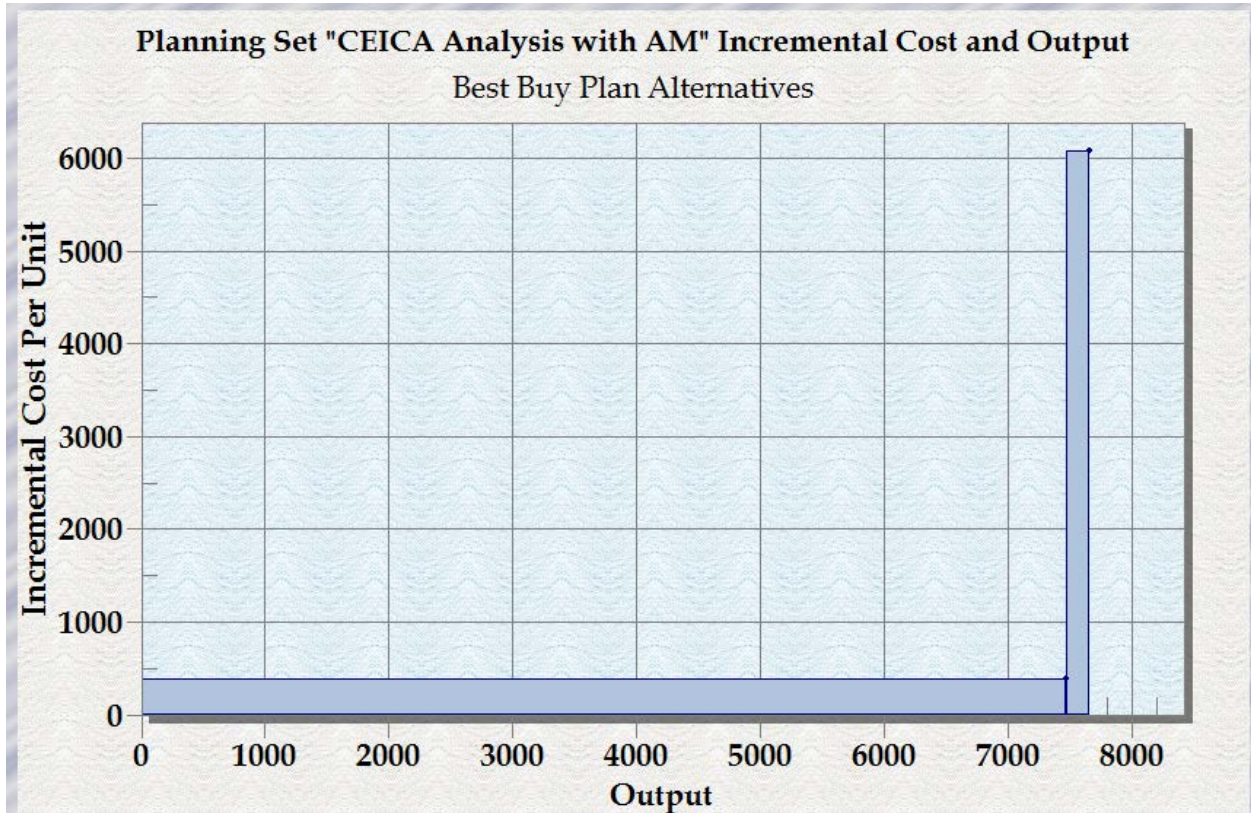


Table 8. Incremental Cost Analysis for Best Buy Plan Alternatives, Bypass Channel Plan Alternatives with AM

| Name | Output (HU's) | Average Annual Cost (\$1000) | Average Cost (\$1,000/HU) | Incremental Cost | Incremental Output (HU) | Incremental Cost per Output |
|--------------------------------------|---------------|------------------------------|---------------------------|------------------|-------------------------|-----------------------------|
| No Action | 0 | 0 | | | | |
| Bypass Channel 15% Diversion, Weir 2 | 7,469 | \$2,914,028 | \$390 | \$2,921,028 | 7,469 | \$390 |
| Original Rock Ramp with Crest 2 | 7,649 | \$4,008,897 | \$524 | \$1,094,869 | 180 | \$6,083 |

Conclusions

The CE/ICA was completed to compare plan alternatives under consideration for the project site. The average annual cost for the Bypass Channel Plan Alternative is between \$2.7 million to \$2.9 million annually depending upon whether AM measures are required. As discussed in the previous sections, the Bypass Channel Plan Alternative would provide 7,469 HU's, for an incremental cost between \$367 to \$390 depending on whether or not AM measures are necessary, while the Rock Ramp Plan Alternative would provide 7,649 HU's total for an incremental cost of between \$6,083 to \$7,029 for the 180

additional HU's. Considering the steep increase in incremental cost to achieve a slightly higher level of HU outputs, the Bypass Channel Plan Alternative with 15 percent diversion and weir design two is the preferred alternative, even if AM measures are required.

Because the No Action Alternative was assumed to continue operation of the existing Intake structure, no effort was made to compare average annual costs of the preferred alternative to average annual benefits from irrigation. Instead the CE/ICA focused on fish passage and habitat as expressed by HU's.