I&M Exhibit: _____

Cause No. 45235

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

JASON A. CASH

INDEX

PRE-FILED VERIFIED DIRECT TESTIMONY OF JASON A. CASH
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

Q. Please state your name and business address.

A. My name is Jason A. Cash. My business address is 1 Riverside Plaza, Columbus, Ohio 43215.

Q. By whom are you employed and in what capacity?

A. I am employed by American Electric Power Service Corporation (AEPSC) as a Senior Staff Accountant in Accounting Policy and Research (AP&R). AEPSC supplies engineering, accounting, planning, advisory, and other services to the subsidiaries of the American Electric Power (AEP) system, one of which is Indiana Michigan Power Company (I&M or the Company).

My responsibilities include providing the AEP and affiliated companies with accounting support for regulatory filings, including the preparation of depreciation studies and testimony. I also monitor regulatory proceedings and legislation for accounting implications and assist in determining the appropriate regulatory accounting treatment.

Q. Please briefly describe your educational background and professional experience.

A. I graduated with a Bachelor of Science degree with a major in accounting from The Ohio State University in 2000. In 2000, I joined AEPSC and have held several positions within the Accounting organization, including general ledger accounting and financial reporting for Ohio Power Company and AEPSC. From 2008 through 2013, I worked in AEPSC's Transmission Accounting department where I was promoted to Supervisor of Transmission Accounting in 2013. I started in my current position as a

Staff Accountant in AP&R in 2014 and was promoted to Senior Staff Accountant in 2019.

Q. Have you previously testified before any regulatory commissions?

A. Yes. I have prepared a depreciation study and filed testimony before the Indiana Utility Regulatory Commission (IURC or Commission) in Cause No. 44967 on behalf of I&M. I have filed testimony before the Public Service Commission of West Virginia in Case No. 19-0063-E-PC and prepared depreciation studies and filed testimony in Case Nos. 18-0645-E-D and 18-0646-E-42T on behalf of AEP subsidiaries Appalachian Power Company and Wheeling Power Company. I have prepared depreciation studies and filed testimony before the Michigan Public Service Commission in Case No. U-18370 on behalf of I&M, before the Public Service Commission of Kentucky on behalf of AEP subsidiary Kentucky Power Company, and before the Tennessee Regulatory Authority in Docket No. 16-00001 on behalf of AEP subsidiary Kingsport Power Company. I also prepared depreciation studies and filed testimony before the Federal Energy Regulatory Commission (FERC) in Docket No. ER15-2114-000 on behalf of Transource West Virginia, LLC, and in Docket No. ER17-419-000 on behalf of Transource Pennsylvania, LLC and Transource Maryland, LLC. Transource West Virginia, LLC, Transource Pennsylvania, LLC, and Transource Maryland, LLC are wholly owned subsidiaries of Transource Energy, LLC. Transource Energy, LLC is a joint venture between AEP and Great Plains Energy.

Q. Have you had any formal training relating to depreciation and utility accounting?

A. Yes. I am a member of the Society of Depreciation Professionals (SDP) and was a former at-large director for the SDP. I have completed training courses offered by the SDP, which include Depreciation Fundamentals, Life and Net Salvage Analysis, and Analyzing the Life of Real World Property. These training classes included topics such as introduction to plant and depreciation accounting, data requirements and collection, depreciation models, life cycle analysis, current regulatory issues, actuarial life analysis, net salvage analysis, and simulation life analysis.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. My testimony recommends revised depreciation accrual rates for I&M's electric plant in service based on a depreciation study for I&M's electric utility plant in service at December 31, 2018 (as adjusted, see below). Schedules I and II in the Depreciation Study Report (included as Attachment JAC-1) detail the results of the study. The depreciation rates determined by the study are intended to provide recovery of invested capital, cost of removal, and credit for salvage over the expected life of the property. The revised depreciation rates are primarily required due to changes in investment, expected life, and net salvage of I&M's utility property.

Q. Are you sponsoring any attachments in this proceeding?

A. I am sponsoring the following attachments:

- Attachment JAC-1: Depreciation Study Report.

- Attachment JAC-2: Brandenburg Industrial Service Company's conceptual dismantling study performed for the Rockport Plant.
- Attachment JAC-3: Sargent and Lundy's conceptual dismantling studies performed for the Company's hydroelectric (or hydraulic) facilities.

Q. Are you sponsoring any workpapers in this proceeding?

A. I am sponsoring the following workpapers:

- WP JAC-1: Depreciation Study Workpapers
- WP JAC-2: I&M Meter Depreciation Calculation

Q. Were the attachments and workpapers that you are sponsoring prepared or assembled by you or under your direction?

A. Yes.

DEPRECIATION STUDY OVERVIEW

Q. What are I&M's current depreciation rates based on?

A. I&M's current depreciation rates are based on the settlement agreement approved in Cause No. 44967 where the Commission approved the Company's current steam production, nuclear production, hydroelectric production, other production, transmission, distribution and general plant depreciation rates.

Q. How do the depreciation rates and annual accruals as a result of your study compare with I&M's current rates and accruals?

A. A comparison of I&M's current rates and accruals and the study rates and accruals is shown below on Figure JAC-1, which is based on adjusted total Company December 31, 2018 depreciable plant balances:

Figure JAC-1
Composite Depreciation Rates and Accruals
Based on Plant In Service at December 31, 2018 (as adjusted)
(Total Company)

	Existing		Study		
Functional Plant Group	Rates	Accruals ($)	Rates	Accruals ($)	Difference ($)
Steam Production	7.52%	75,943,109	7.77%	78,512,689	2,569,580
Nuclear Production	3.22%	113,352,194	4.13%	145,081,741	31,729,547
Hydraulic Production	2.30%	1,309,535	2.72%	1,548,603	239,068
Other Production	5.26%	1,945,253	5.29%	1,953,777	8,524
Transmission	1.95%	30,541,131	2.48%	38,872,874	8,331,743
Distribution	3.53%	79,020,380	3.54%	79,278,153	257,773
General	3.46%	4,829,294	3.59%	5,015,431	186,137
Total Depreciable Plant	3.59%	306,940,896	4.09%	350,263,268	43,322,372

Q. What are you recommending with respect to I&M's depreciation accrual rates?

A. Based on results of the study, I am recommending an overall increase in I&M's depreciation accrual rates, to be made effective upon implementation of new base rates. For purposes of comparison, applying my recommended I&M Indiana rates to total Company depreciable plant in service as of December 31, 2018 (as adjusted, see below) would produce an increase in annual depreciation expense of $43,322,372. The main reasons for the increase are discussed later in my testimony.

Q. What is the approximate impact of the Company's proposed depreciation accrual rates on an Indiana jurisdictional basis?

A. I obtained the Indiana jurisdictional allocation factors from Company witness Duncan and estimate an annual increase to depreciation expense of approximately $32.2 million on an Indiana jurisdictional basis.

STUDY METHODS AND PROCEDURES

Q. Please explain the definition of depreciation as used in preparing your depreciation study.

A. The definition of depreciation that I used in preparing the study is the same that is used by FERC and the National Association of Regulatory Utility Commissioners:

> Depreciation, as applied to depreciable electric plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities.
>
> Net salvage value means the salvage value of property retired less the cost of removal.
>
> Service value means the difference between original cost and the net salvage value of the electric plant.[1]

Q. Please explain the methods and procedures you used in preparing your depreciation study.

A. The methods and procedures are fully described in Attachment JAC-1, the Depreciation Study Report. In summary, all of the property included in the Depreciation Study Report was considered on a group plan. Under the group plan, depreciation is accrued upon the basis of the original cost of all property included in each depreciable plant group instead of individual items of property. Upon retirement of any depreciable property, its full cost, less any net salvage realized, is charged to the accumulated provision for depreciation regardless of the age of the particular item

[1] 18 C.F.R. pt. 101 ("Definitions" ¶¶ 12, 19, 37).

retired. Also under this plan, the dollars in each primary plant account are considered as a separate group for depreciation accounting purposes and an annual depreciation rate for each account is determined. In this study, the plant groups consisted of the individual primary plant accounts for Production, Transmission, Distribution, and General Plant property. The depreciation rates were calculated by the Average Remaining Life Method, which is the same method that was used to calculate I&M's current depreciation rates. The Average Remaining Life Method recovers the original cost of the plant (adjusted for net salvage) less accumulated depreciation over the average remaining life of the plant.

For Production Plant, the generating unit retirement dates and the interim retirement history for the individual plant accounts were used to determine the average service lives and the remaining lives of the plants. The average service lives for the Company's Transmission, Distribution, and General Plant were determined using statistical procedures similar to those used in the insurance industry in studies of human mortality. The historical retirement experience of property groups was studied, and retirement characteristics of the property were described using the Iowa-type retirement dispersion curves.

Net salvage for each property group was determined based on actual historical experience for Production, Transmission, Distribution, and General Plant accounts. In addition, Production Plant included terminal retirement net salvage amounts for Steam and Hydraulic Production Plant. To determine terminal net salvage for Steam Production Plant, I&M commissioned the independent industrial service company, Brandenburg, in 2018 to update the conceptual dismantling cost

estimate for the Rockport Plant. A copy of this estimate is included with my testimony as Attachment JAC-2. For I&M's hydraulic production plants, my depreciation study used the conceptual dismantling cost estimates that are reflected in I&M's current depreciation rates. The estimates, presented in I&M's last rate case, were prepared by the independent engineering firm Sargent & Lundy (S&L). The dismantling studies for I&M's hydraulic plants were last performed in 2016 and the estimates provided from those studies continue to provide reasonable bases for calculating terminal net salvage on each hydraulic plant. A copy of the S&L dismantling studies are included with my testimony as Attachment JAC-3. The recommended depreciation rates include the estimated final removal cost and expected terminal net salvage amounts specific to each of the Company's steam and hydraulic generating stations at their estimated retirement dates.

Q. Do you consider the dismantling studies used in your depreciation study to be reliable and of a type generally relied upon by persons such as yourself during the course of studying depreciation rates?

A. Yes.

Q. Is Brandenburg's conceptual dismantlement cost estimate for the entire Rockport Plant?

A. Yes. I&M contracted Brandenburg in 2018 to perform a dismantlement study of the entire Rockport Plant. Brandenburg's conceptual dismantlement cost estimate of the Rockport Plant estimates the Company's full responsibility for dismantlement of the entire Rockport Plant at the time the plant is expected to end operation.

Brandenburg's estimate is less than previous estimates that have been provided by the Company in prior cases.

Q. Please explain how you determined terminal net salvage as of the retirement year.

A. Brandenburg provided terminal net salvage amounts, excluding any asbestos, ash pond, or landfill-type removal costs, stated at a 2018 price level. For the purposes of developing depreciation rates, I needed the terminal net salvage amount at the time of the unit retirement. Thus, I applied a 2.23% inflation rate factor to the net salvage amounts provided by the Brandenburg study to determine the terminal net salvage amount at Rockport Unit 1's retirement year. Similarly, the S&L study provided terminal net salvage amounts stated at a 2015 price level. To estimate the cost at each plant's retirement date, I applied the same 2.23% inflation rate factor to the net salvage amounts provided by the S&L study in order to determine the terminal net salvage amount for each hydraulic plant at the plant's retirement year. The terminal net salvage amounts after inflation were used in the calculation of net salvage percentages in the depreciation study.

Q. What is the source of the 2.23% inflation rate used for this purpose?

A. The 2.23% inflation rate was taken from the *Livingston Survey*, a December 21, 2018 publication of the research department of the Federal Reserve Bank of Philadelphia. The *Livingston Survey* provides a long term inflation outlook projecting an inflation rate for a ten year period.

Q. Why did the depreciation study exclude the cost to remove asbestos and to cover ash ponds and landfills?

A. The costs to remove asbestos and to cover ash ponds and landfills are included in the Company's asset retirement obligation (ARO) accounting. The depreciation and accretion on these AROs are incorporated into the cost of providing service, which is discussed in more detail by Company witness Ross.

Q. Were there any major changes in the depreciation parameters for I&M's plant in service since the depreciation study presented in Cause No. 44967, which included depreciable plant balances at December 31, 2016, adjusted for the production plant projected to be placed in service in 2017?

A. Yes. The Cook Nuclear Plant (Cook) had an increase to depreciable plant in service of $298.7 million, since the last depreciation study was performed.

The Settlement Agreement approved in Cause No. 44967, reflected a depreciation rate that assumed an average remaining life of 11.46 years for Account 370, Meters. The current depreciation study reflects the Company's decision to replace its current meters with new Advanced Metering Infrastructure (AMI) meters over the next three years (2020-2022). In preparation of the meter replacement, the Company is proposing in this case to establish a depreciation rate for Account 370 that would allow for any undepreciated balance related to the current meters to be recovered over the life of the newly installed AMI meter, which is estimated to be approximately 15 years as discussed below. This proposal is consistent with standard retirement accounting policies and procedures as described further below.

In addition, Company witnesses Thomas and Isaacson discuss the Company's plans for the AMI deployment.

Q. Please explain the methodology you used to establish a depreciation rate for Account 370.

A. As previously mentioned, the Company has decided to transition to AMI meters across its service territory over three years, or 2020 through 2022. This requires the Company to retire the meters currently installed over the same time period. As a result, a depreciation rate was calculated in the current depreciation study to reflect the retirement of the meters that are currently installed and the installation of new AMI meters. The depreciation rate calculation for Account 370 uses the currently approved depreciation rate through 2020, the expected retirement of the current meters by year, and the projected costs to install AMI Meters by year. Please see WP JAC-2 for the depreciation rate calculation of Account 370.

Q. Over what time period does the Company calculate depreciation rates for Account 370 after the installation of AMI meters?

A. The depreciation rates that were calculated for Account 370 are based on a 15 year estimated useful life for AMI meters after the meters are installed.

Q. Is recovery of the remaining value of property, plant and equipment retired a normal utility ratemaking practice?

A. Yes. Recovery of the remaining value of a generating station or Transmission, Distribution and General property is normal utility ratemaking practice and this practice follows FERC Electric Plant Instruction No. 10 "Additions and Retirements of Electric Plant," paragraph (2), which states:

(2) When a retirement unit is retired from electric plant, with or without replacement, the book cost thereof shall be credited to the electric plant account in which it is included, determined in the manner set forth in paragraph D, below. If the retirement is of a depreciable class, the book cost of the unit retired and credited to electric plant shall be charged to the accumulated provision for depreciation applicable to such property.

Q. What depreciation rate does the Company propose for the Rockport Unit 2 selective catalytic reduction system (SCR or Unit 2 SCR) that is to be installed and placed in service in 2020?

A. In Cause No. 44871, the Commission granted I&M a certificate of public convenience and necessity (CPCN) to install SCR technology on Rockport Unit 2. In that proceeding, the Commission also granted I&M's request for a ten-year depreciation rate for the Rockport Unit 2 SCR, or 10.00%. The Unit 2 SCR is expected to be placed in service in May 2020. Use of a 10.00% depreciation rate does not allow for the Unit 2 SCR to be fully depreciated when the Rockport Unit 2 lease expires and the Unit 2 assets are retired in 2022 or when the Rockport Plant retires in 2028. In order to reduce the possibility that an undepreciated balance will exist at the time that the Rockport Plant is retired, the Company proposes establishing a 12.00% depreciation rate in this Cause in order to recover the investment in the Unit 2 SCR plus net salvage over the remaining life of Rockport Unit 1, or 2028. Please refer to the depreciation rate calculation for the Unit 2 SCR within WP JAC-1. In addition, the Company respectfully requests that the Commission approve any remaining net plant associated with the Unit 2 SCR to be recovered through Rockport Unit 1 depreciation when the Rockport Unit 2 lease expires and the Unit 2 assets are retired.

Q. Why is I&M's proposal to change the depreciation rate of the Unit 2 SCR reasonable?

A. Depreciating the Unit 2 SCR over the remaining life of Rockport Unit 1 remains consistent with the depreciation treatment that was used for I&M's retired Tanner Creek units. It is also consistent with the depreciation treatment of the Rockport Unit 2 DSI that was approved in I&M's last rate case (i.e. if the Rockport Unit 2 lease is not renewed and the Rockport Unit 2 depreciable plant is retired from the Company's books, any remaining net plant associated with the Rockport Unit 2 DSI will be recovered through Rockport Unit 1 depreciation).

Q. Are you also proposing a depreciation rate for the South Bend Solar project?

A. Yes. As described by Company witness Kerns, I&M will own and operate a 20 MW solar facility in South Bend, Indiana which is forecasted to go into service in December 2020. The Company will be filing a separate case that is specific to the South Bend Solar project but is requesting that a depreciation rate be established for the project during this case because it is forecasted to be placed in service during the test year. The Company proposes initially using a 3.40% depreciation rate for the South Bend Solar project which is based on Company estimates of a 30 year useful life and also includes a component for terminal net salvage. Please refer to the depreciation rate calculation for the South Bend Solar project within WP JAC-1.

Q. Please explain any depreciation study adjustments made to amounts booked that were used to calculate depreciation rates.

A. In addition to the Company's electric utility plant in service and accumulated depreciation on the books at December 31, 2018, the depreciation study includes an

adjustment for the 2019 forecasted additions to plant in service at Rockport, Cook, and the Company's hydraulic generating stations to reflect a forward looking test period for the Company's steam, nuclear and hydraulic production plant investment. The depreciation study also includes a calculation to estimate a corresponding adjustment to accumulated depreciation for all of production plant that reflects an additional year of depreciation accrued through 2019. The adjustments increased original cost and accumulated depreciation balances by the following amounts:

- Rockport Plant – Original cost $17.8 million; accumulated depreciation $75.5 million.
- Cook Plant – Original cost $316.4 million; accumulated depreciation $108.7 million.
- Hydraulic Production Plant – Original cost $2.3 million; accumulated depreciation $1.3 million.
- Other Production Plant - Accumulated depreciation $1.9 million.

The total forecasted additions for production plant included in the depreciation study total approximately $336.5 million, including $183.8 million of forecasted additions for the Cook Plant related to the Life Cycle Management (LCM) project. Company witness Lies discusses capital investment at Cook. The forecasted additions to Rockport, Cook, and the hydraulic generating station plant balances and accumulated depreciation were included with the depreciation study because production plant uses finite end-of-life dates in the depreciation study to calculate depreciation rates. In comparison, transmission, distribution and general plant uses an average service life and average remaining life to calculate depreciation rates in

the depreciation study. Including the forecasted additions and accumulated depreciation will ensure that more accurate depreciation rates are established for each generating station when rates become effective in 2020. Establishing depreciation rates in this manner better supports the full depreciation of such assets and better aligns customer rates with the remaining service life of each generating station while reducing the extent to which the costs will need to be recovered through rates after the assets are no longer in service.

Q. Did you make any additional adjustments to the depreciation study amounts that were used to calculate depreciation rates?

A. Yes. A depreciation study adjustment was made to accumulated depreciation to recognize the difference in accumulated depreciation by using the weighted average depreciation rates for book purposes versus the Commission-approved Indiana depreciation rates. Since Indiana and Michigan have different depreciation rates, it is necessary to adjust the total weighted average booked accumulated depreciation amount to an Indiana total Company amount to take into account the historical jurisdictional difference in accumulated depreciation caused by the different depreciation rates.

Depreciation study adjustments were also made to booked original cost and accumulated depreciation amounts related to Cook's LCM Project and Rockport's DSI and Unit 1 SCR Projects. I&M received approval from the IURC (Cause Nos. 44182, 44331 and 44523) to recover a return on construction work in progress (CWIP) for these projects. This approval eliminates the accrual of allowance for funds used during construction (AFUDC) on the Indiana jurisdictional project

amounts during the period that Indiana retail rates include such CWIP recovery. Michigan continued to record AFUDC on these projects, which created a difference between Indiana's original cost and accumulated depreciation when compared to Michigan. The LCM AFUDC adjustment decreased Cook's original cost by $16.5 million and increased accumulated depreciation by $18.1 million. The DSI AFUDC adjustment decreased Rockport's original cost by $798,000 and decreased accumulated depreciation by $273,000. The Rockport Unit 1 SCR AFUDC adjustment decreased Rockport's original cost by $2.2 million and decreased accumulated depreciation by $280,000.

STUDY RESULTS

Q. Please explain the results of your study for Steam Production Plant.

A. The composite depreciation rate for Steam Production Plant increased slightly from 7.52% to 7.77% mainly due to a $21.7 million increase in the depreciable plant in service balance since the 2016 depreciation study.

Q. Please explain the results of your study for Nuclear Production Plant.

A. The composite rate for Nuclear Production Plant increased from 3.22% to 4.13% mainly due to a $298.7 million increase in the depreciable plant in service balance since the 2016 depreciation study. The increase in depreciable nuclear plant in service since 2016 is mostly due to the LCM Project, which is discussed in detail by Company witnesses Thomas and Lies.

Q. Please explain the results of your study for Hydraulic Production Plant.

A. The composite rate for Hydraulic Production Plant increased from 2.30% to 2.72% due a $3.3 million increase in the depreciable plant in service balance since the 2016 depreciation study.

Q. Please explain the results of your study for Other Production Plant.

A. The composite depreciation rate for Other Production Plant increased slightly from 5.26% to 5.29% due to a small increase in the depreciable plant in service balance since the 2016 depreciation study.

Q. Please explain the results of your study for Transmission Plant.

A. The depreciation rate for Transmission Plant increased from 1.95% to 2.48% due to increases in the net salvage ratio for five accounts (Accounts 353, 354, 355, 356 and 358) and decreases in the average service life for three accounts (Accounts 352, 353, and 355). The depreciation rate increase was partially offset by an increase in the average service life for Account 356.

Q. Please explain the results of your study for Distribution Plant.

A. The depreciation rate for Distribution Plant increased slightly from 3.53% to 3.54% due to increases in the net salvage ratio for six accounts (Accounts 361, 362, 364, 365, 369 and 373), decreases in the average service life of two accounts (Accounts 361 and 362), and updating the depreciation rate that was calculated for Account 370. The increase was offset by increases in the average service life for eight accounts (Accounts 364, 365, 366, 367, 368, 369, 371, and 373).

Q. Please explain the results of your study for General Plant.

A. The depreciation rate for General Plant increased from 3.46% to 3.59% due to increases in the net salvage ratio for three accounts (Accounts 390, 391, and 398). The rate increase was partially offset by an increase in the average service life for Account 390.

Q. Does this conclude your pre-filed verified direct testimony?

A. Yes.

VERIFICATION

I, Jason A. Cash, Senior Staff Accountant in Accounting Policy and Research of American Electric Power Service Corporation (AEPSC), affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date: 5/6/19

Jason A. Cash

INDIANA MICHIGAN POWER COMPANY

DEPRECIATION STUDY REPORT

OF

ELECTRIC PLANT IN SERVICE

AT DECEMBER 31, 2018

DEPRECIATION STUDY REPORT

Table of Contents

I. INTRODUCTION

This report presents the results of a depreciation study of Indiana Michigan Power Company's (I&M) depreciable electric utility plant in service at December 31, 2018 adjusted to include 2019 forecasted additions to production plant. The study was prepared by Jason A. Cash, Senior Staff Accountant – Accounting Policy and Research at American Electric Power Service Corporation (AEPSC). The purpose of the depreciation study was to develop appropriate annual depreciation accrual rates for each of the primary plant accounts that comprise the functional groups for which I&M computes its annual depreciation expense.

The recommended depreciation rates are based on the Average Remaining Life Method of computing depreciation. Further explanation of this method is contained in Section II of this report.

The definition of depreciation used in this Study is the same as that used by the Federal Energy Regulatory Commission (FERC) and the National Association of Regulatory Utility Commissioners:

> "Depreciation, as applied to depreciable electric plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities."

"Service value means the difference between original cost and the net salvage value (net salvage value means the salvage value of the property retired less the cost of removal) of the electric plant." (FERC Accounting and Reporting Requirements for Public Utilities and Licensees, ¶15.001.)

SCHEDULE I of this report shows the recommended depreciation accrual rates by primary plant accounts and composited to functional plant classifications. SCHEDULE II compares depreciation expense using existing rates approved by the Commission and rates recommended by the depreciation study. SCHEDULE III shows a comparison of the current and existing mortality characteristics that were used to compute the recommended depreciation rates for Transmission, Distribution and General Plant functions. SCHEDULE IV lists I&M's generating stations and includes the year installed (in service) and the estimated retirement year. A comparison of I&M's current functional group composite depreciation rates and accruals to the recommended functional group rates and accruals follows:

Figure JAC-1
Composite Depreciation Rates and Accruals
Based on Plant In Service at December 31, 2018 (as adjusted)
(Total Company)

	Existing		Study		
Functional Plant Group	Rates	Accruals ($)	Rates	Accruals ($)	Difference ($)
Steam Production	7.52%	75,943,109	7.77%	78,512,689	2,569,580
Nuclear Production	3.22%	113,352,194	4.13%	145,081,741	31,729,547
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Other Production	5.26%	1,945,253	5.29%	1,953,777	8,524
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Distribution	3.53%	79,020,380	3.54%	79,278,153	257,773
General	3.46%	4,829,294	3.59%	5,015,431	186,137
Total Depreciable Plant	3.59%	306,940,896	4.09%	350,263,268	43,322,372

Based on total Company depreciable plant in-service as of December 31, 2018 (as adjusted), I am recommending an increase in Indiana depreciation rates that would produce an annual increase in depreciation expense of $43,322,372 when applying the Indiana depreciation rates to the total Company depreciable plant in service balances. The depreciation rate changes are necessary because of changes in investment, average service lives and net salvage estimates used to calculate I&M's current depreciation rates.

II. DISCUSSION OF METHODS AND PROCEDURES USED IN THE STUDY

1. Group Method

All of the depreciable property included in this report was considered on a group plan. Under the group plan, depreciation expense is accrued upon the basis of the original cost of all property included in each depreciable plant account. Upon retirement of any depreciable property, its full cost, less any net salvage realized, is charged to the accrued depreciation reserve regardless of the age of the particular item retired. Also, under this plan, the dollars in each primary plant account are considered as a separate group for depreciation accounting purposes and an annual depreciation rate for each account is determined. The annual accruals by primary account were then summed, to arrive at the total accrual for each functional group. The total accrual divided by the original cost yields the functional group accrual rate.

2. Annual Depreciation Rates Using the Average Remaining Life Method

I&M's current depreciation rates are based on the Average Remaining Life Method. The Average Remaining Life Method recovers the original cost of the plant, adjusted for net salvage, less accumulated depreciation, over the average remaining life of the plant. By this method, the annual depreciation rate for each

account is determined on the following basis:

$$\text{Annual Depreciation Expense} = \frac{(\text{Orig. Cost} \times \text{Net Salvage Ratio}) - \text{Accumulated Depreciation}}{\text{Average Remaining Life}}$$

$$\text{Annual Depreciation Rate} = \frac{\text{Annual Depreciation Expense}}{\text{Original Cost}}$$

3. Methods of Life Analysis

Depending upon the type of property and the nature of the data available from the property accounting records, one of three life analyses was used to arrive at the historically realized mortality characteristics and service lives of the depreciable plant investments. These methods are identified and described as follows:

Life Span Analysis

The life span analysis was employed for Production Plant. I&M's investment in production plant includes steam, nuclear, hydraulic and solar generating plants. The life-span method of analysis is particularly suited to specific location property, such as a generating plant, where all of the surviving investments are likely to be retired in total at a future date.

The key elements in the life span analysis are the age of the surviving investments, the projected retirement date of the facility and the expected interim retirements. Interim retirements are those that are expected to occur between the date of the depreciation study and the expected final retirement date of the generating plant. Examples of interim retirements include fans, pumps, motors, a set of boiler tubes, a turbine rotor, etc. The interim retirement history for each

primary production plant account was analyzed and the results of those analyses were used to project future interim retirements.

The age of the surviving investments was obtained from I&M's property accounting records. The retirement dates used in the life-span analysis for Steam Production Plant (Rockport) have not been updated from the retirement dates that were presented in Cause No. 44967. For Rockport Unit 2's Dry Sorbent Injection (DSI) system, the 2025 date that was approved as a part of the settlement in Cause No. 44967 was used to calculate depreciation rates for this study, even though the other owned equipment at Rockport Unit 2 is being depreciated through 2022 when the lease term expires. For Nuclear and Hydraulic Production plants, the retirement dates are based on the Nuclear Regulatory Commission (NRC) and FERC license expiration dates for the plants, except for the Constantine hydraulic plant where I&M is in the process of filing for 30 year license extension with FERC. For Other Production Plant, the 20 year life for the Company's four solar facilities was based on I&M's expected useful life for the facilities as approved by the Commission in the order in Cause No. 44511.

A discussion of the life analyses for Steam, Nuclear, Hydraulic and Other Production (solar) Plant follows:

Steam Production Plant

I&M's depreciable investment in Steam Production Plant is for the Rockport Generation plant. The Rockport Plant is located on the Ohio River near Rockport Indiana and consists of two generating units. Rockport Unit 2 is a leased unit and the depreciable property that is included in this report for Unit 2 consists of equipment items that are owned by I&M at the leased unit.

The Rockport generating units and their capacities are as follows (also shown on SCHEDULE IV – Estimated Generation Plant Retirement Dates):

Plant	Unit	Rating	Commercial Operating Date
Rockport	1	1,300 MW	1984
Rockport	2	1,300 MW	1989

I&M continues to evaluate each of the Rockport generating units and estimated the following retirement dates for each of the units:

Plant	Unit	Retirement Date
Rockport	1	2028
Rockport	2	2022

The estimated retirement date for Rockport Unit 1 is 2028 and is the same retirement date that was proposed for Rockport Unit 1 in Cause No. 44967. The estimated retirement date for the associated owned equipment at Rockport Unit 2 is 2022 and is based on the expiration date of the lease.

In addition, I&M added $21.7 million to the original cost of Rockport Plant since the last depreciation study. Those additions made at Rockport since the last depreciation study are reasons for the slightly higher recommended depreciation rates in Steam Production Plant.

Nuclear Production Plant

I&M's depreciable investment in nuclear production plant is the

Cook plant that is located on Lake Michigan at Bridgman, Michigan. The Cook generating units and their capacities are as follows:

Plant	Unit	Rating	Commercial Operating Date
Cook	1	1,020 MW	1975
Cook	2	1,090 MW	1978

In 2005, the NRC granted I&M a 20 year license extension to Cook Plant which established the currently approved estimated retirement dates of 2034 for Unit 1 and 2037 for Unit 2.

In 2013, the Company received Commission approval in Cause No. 44812 to complete a number of capital additions to the Cook Plant under a Life Cycle Management (LCM) project. The LCM project is intended to allow the Cook Plant to continue to operate during the 20 year license extension that was granted in 2005. Cook Plant's increase in depreciable plant in service of $298.7 million since the last depreciation study (with adjusted December 31, 2016 plant in service balances) was mostly due to capital additions related to the LCM project.

Hydraulic Production Plant

I&M's investment in Hydraulic Production Plant includes Berrien Springs, Buchanan, Constantine, Elkhart, Mottville and Twin Branch plants. The plants have a number of generating units that were placed into commercial operation over the period from 1904 through 1923. All the plants are located on the St. Joseph River in either the state of Indiana or Michigan.

The generating plants and their capacities are as follows:

Plant	Capacity	First Unit's Commercial Operating Date	FERC License Expiration
Berrien Springs	7.2 MW	1908	*
Buchanan	4.1 MW	1919	2036
Constantine	1.2 MW	1921	2053
Elkhart	3.4 MW	1913	2030
Mottville	1.7 MW	1923	2033
Twin Branch	4.8 MW	1904	2036

* Not FERC licensed. The retirement date was estimated to be the same date as Buchanan and Twin Branch which is 2036.

I&M is in the process of filing with FERC to relicense the Constantine Plant and continue operating the plant for at least an additional 30 year period.

Other Production Plant

I&M's depreciable investment in Other Production Plant at December 2016 is for the Deer Creek, Olive, Twin Branch and Watervliet Solar Plants. The Deer Creek Solar Plant is located just south of Marion, Indiana and is generating up to 2.5 megawatts of electricity. The Olive Solar Plant is located in New Carlisle, Indiana and is generating up to 5.0 megawatts of electricity. The Twin Branch Solar Plant is located in Mishawaka, Indiana and is generating up to 2.6 megawatts of electricity. The Watervliet Solar Plant is located in Watervliet, MI and is generating up to 4.6 megawatts of electricity.

The generating plants and their capacities are as follows:

Plant	Capacity	Commercial Operating Date
Deer Creek	2.5 MW	2015
Olive	5.0 MW	2016
Twin Branch	2.6 MW	2016
Watervliet	4.6 MW	2016

Actuarial Analysis – Transmission, Distribution and General Plant

This method of analyzing past experience represents the application to industrial property of statistical procedures developed in the life insurance field for investigating human mortality. It is distinguished from other methods of life estimation by the requirement that it is necessary to know the age of the property at the time of its retirement and the age of survivors, or plant remaining in service; that is, the installation date must be known for each particular retirement and for each particular survivor.

The application of this method involves the statistical procedure known as the "annual rate method" of analysis. This procedure relates the retirements during each age interval to the exposures at the beginning of that interval, the ratio of these being the annual retirement ratio. Subtracting each retirement ratio from unity yields a sequence of annual survival ratios from which a survivor curve can be determined. This is accomplished by the consecutive multiplication of the survivor ratios. The length of this curve depends primarily upon the age of the oldest property. Normally, if the period of years from the inception of the account to the time of the study is short in relation to the expected maximum life of the property, an incomplete or stub survivor curve results.

While there are a number of acceptable methods of smoothing and extending this stub survivor curve in order to compute the area under it from

which the average life is determined, the well-known Iowa Type Curve Method was used in this study.

By this procedure, instead of mathematically smoothing and projecting the stub survivor curve to determine the average life of the group, it was assumed that the stub curve would have the same mortality characteristics as the type curve selected. The selection of the appropriate type curve and average life is accomplished by plotting the stub curve, superimposing on it Iowa curves of the various types and average lives drawn to the same scale, and then determining which Iowa type curve and average life best matches the stub.

The Actuarial Method of Life Analysis was used for the following accounts:

352.0 Transmission Structures & Improvements
353.0 Transmission Station Equipment
358.0 Underground Conductor and Devices
361.0 Distribution Structures & Improvements
362.0 Distribution Station Equipment
390.0 General Structures & Improvements

The result of the actuarial analysis for the above accounts is detailed in the depreciation study work papers.

Simulated Plant Record Analysis – Transmission Plant

The “Simulated Plant Record” (SPR) method designates a class of statistical techniques that provide an estimate of the age distribution, mortality dispersion and average service life of property accounts whose recorded history provides no indication of the age of the property units when retired from service. For each such account, the available property records usually reveal only the

annual gross additions, annual retirements and balances with no indication of the age of either plant retirements or annual plant balances. For the accounts using this methodology, the "Balances method" of analysis was used.

The SPR Balances Method is a trial and error procedure that attempts to duplicate the annual balance of a plant account by distributing the actual annual gross additions over time according to an assumed mortality distribution. Specifically, the dollars remaining in service at any date are estimated by multiplying each year's additions by the successive proportion surviving at each age as given by the assumed survivor characteristics. For a given year, the balance indicated is the accumulation of survivors from all vintages and this is compared with the actual book balance. This process is repeated for different survivor curves and average life combinations until a pattern is discovered which produces a series of "simulated balances" most nearly equaling the actual balances shown in a company's books.

This determination is based on the distribution producing the minimum sum of squared differences between the simulated balance and the actual balances over a test period of years.

The iterative nature of the simulated methods makes them ideally suited for computerized analysis. For each analysis of a given property account, the computer program provides a single page summary containing the results of each analysis indicating the "best fit" based on criteria selected by the user.

The results of the analysis using the Balance Method is shown in the depreciation study work papers. The analysis also shows the value of the Index of Variation of the difference that is calculated according to the Balances Method where a lower value for the Index of Variation indicates better agreement with the actual data.

The SPR Method of Life Analysis was utilized for the following accounts:

354.0 Transmission Towers & Fixtures

355.0 Transmission Poles & Fixtures

356.0 OH Conductor & Devices

364.0 Poles, Towers & Fixtures

365.0 Overhead Conductor & Devices

366.0 Underground Conduit

367.0 Underground Conductor

368.0 Line Transformers

369.0 Services

371.0 Installations on Customers' Premises

373.0 Street Lighting and Signal Systems

Vintage Year Accounting – General Equipment

In 1998, the Company began using a vintage year accounting method for general plant accounts 391 to 398 in accordance with Federal Energy Regulatory Commission Accounting Release Number 15 (AR-15). This accounting method requires amortization of vintage groups of property over their useful lives. AR-15 also requires that property be retired when it meets its average service life.

As a result, my recommendation for these accounts is that the current useful life approved by the Commission be retained and used to continue depreciation of the account balances.

4. Final Selection of Average Life and Curve Type

The final selection of average life and curve type for each depreciable plant account analyzed by the Actuarial and SPR Methods was primarily based on the results of the mortality analyses of past retirement history.

III. NET SALVAGE

1. Net Salvage - Steam Production Plant

The net salvage analysis for steam production plant included a review of the Company's experienced functional interim retirement, salvage and removal history for the period 1954-2018. This interim salvage analysis calculated life to date salvage, removal and net salvage percentages as compared to original cost retirements.

While this type of analysis was used to determine the net salvage applicable to interim retirements for steam production plant, the most significant net salvage amount for generating plants occurs at the end of their life. Therefore, to assist in establishing total net salvage applicable to I&M's steam generating plant, I&M contracted Brandenberg Industrial Service Company (Brandenberg) to update the conceptual demolition cost estimate for the Rockport Plant that was included in I&M's last depreciation study and incorporated in I&M's current depreciation rates. The updated Brandenberg cost estimate to demolish the Rockport Plant is based on current (2018) price levels which were inflated to the retirement date of Rockport Unit 1 (2028) in the depreciation study. The estimate of demolition costs was included in the net salvage ratios for Steam Production Plant. Brandenberg's demolition costs incorporated in the depreciation study totals do not include Asset Retirement Obligation (ARO) amounts associated with the removal of asbestos or any cost associated with the final disposition of Rockport landfills and ash ponds since accretion and depreciation associated with these AROs is included separately in I&M's cost of service.

2. Net Salvage - Nuclear Production Plant

The net salvage analysis for nuclear production plant included a review of the Company's experienced functional interim retirement, salvage and removal history for the period 1995-2018. Prior to June 2007, I&M maintained salvage and removal costs at the functional plant level, rather than by primary plant accounts. To determine gross salvage, gross removal and net salvage percentages for individual plant accounts, original cost retirements, salvage and removal were detailed by account for the period 1995 through 2018. Total functional salvage and removal were allocated to individual plant accounts using original cost retirements for the period 1995 to 2007 and were listed as directly charged for 2008 through 2018. The gross salvage and cost of removal percentages were calculated for the twenty-four year time period (1995 to 2018) for each account. The salvage and removal percentages for each account were then netted to determine a net salvage percentage for each account.

Costs associated with the final retirement of I&M's Cook nuclear plant are included in the Company's nuclear decommissioning and ARO accounting and are not included in the depreciation study.

3. Net Salvage - Hydraulic Production Plant

The net salvage analysis for hydraulic production plant included a review of the Company's experienced functional interim retirement, salvage and removal history for the period 2001-2018. This interim salvage analysis calculates annual interim salvage, removal and net salvage percentages as compared to original cost retirements.

As with the depreciation study that was performed for Cause No. 44967, I&M relied on the same conceptual terminal demolition cost estimates that were provided by Sargent & Lundy (S&L) for each of the Company's hydraulic plants in

that Cause. Since the S&L cost estimates to demolish the hydraulic plants are based on 2015 price levels, the S&L cost estimates were inflated to each plant's estimated retirement date in the depreciation study. I&M's current depreciation study uses the interim net salvage analysis mentioned above plus the S&L conceptual terminal demolition cost estimates to determine the total net salvage amount to include in the depreciation rate calculation for each of the Company's Hydraulic Production Plants.

4. Net Salvage - Other Production Plant

As with the depreciation study that was performed for Cause No. 44967, the net salvage analysis for other production plant included an estimated cost for demolition at each site and an estimated cost to recycle the number of panels located at each site.

5. Net Salvage – Transmission, Distribution and General Plant

The net salvage percentages used in this report for Transmission, Distribution and General Plant are expressed as a percent of original cost and are based on the Company's experience combined with the judgment of the analyst. Prior to June 2007, I&M maintained salvage and removal costs at the functional plant level, rather than by primary plant accounts. To determine gross salvage, gross removal and net salvage percentages for individual plant accounts, original cost retirements, salvage and removal were detailed by account for the period 1995 through 2018. Total functional salvage and removal were allocated to individual plant accounts using original cost retirements for the period 1995 to 2007 and were listed as directly charged for 2008 through 2018. The gross salvage and cost of removal percentages were calculated for the

twenty-four year time period (1995 to 2018) for each account. The salvage and removal percentages for each account were then netted to determine a net salvage percentage for each account.

The net salvage percents were converted to net salvage ratios (1 minus the net salvage percentage) which appear in Column IV on SCHEDULE I. The net salvage percentages were used to determine the total amount to be recovered through depreciation. The same net salvage percentages were also reflected in the determination of the calculated depreciation requirement, which was used to allocate accumulated depreciation at the functional group to the accounts comprising each group.

6. Net Salvage – Ratios

The net salvage ratios shown in Column IV on SCHEDULE I of this report may be explained as follows:

a. Where the ratio is shown as unity (1.00), it was assumed that the net salvage in that particular account would be zero.

b. Where the ratio is less than unity, it was assumed that the salvage exceeded the removal costs. For example, if the net salvage were 20%, the net salvage ratio would be expressed as .80.

c. Where the ratio is greater than unity, it was assumed that the salvage was less than the cost of removal. For example, if the net salvage were minus 5%, the net salvage ratio would be expressed as 1.05.

IV. CALCULATION OF DEPRECIATION REQUIREMENT

The accumulated depreciation by functional group was allocated to individual plant accounts based on the calculation of a depreciation requirement (theoretical reserve) for each plant account using the average service life, curve type and net salvage amount recommended in this study.

V. STUDY RESULTS

Production, Transmission, Distribution and General plant results are discussed below. In addition, Transmission, Distribution and General Plant average service life, retirement dispersion pattern and net salvage percentages used to calculate each primary plant account depreciation rate are shown on SCHEDULE III. The mortality characteristics and net salvage values for the current rates are also shown. Changes to the mortality characteristics follow trends shown by historical retirement experience. Gross salvage and gross cost of removal percentages were largely based on the history of each account.

Steam Production Plant

Depreciation rates for Rockport Plant increased slightly from 7.52% to 7.77% mainly due to a $21.7 million increase in the original cost since the prior depreciation study (adjusted plant balances at December 31, 2016). The depreciation rates calculated for the Rockport Plant in the current depreciation study include a lower amount of net salvage that resulted from the updated conceptual demolition cost estimate provided by Brandenberg.

Rockport Unit 1 depreciation rates are based on a 2028 retirement date.

Except for the Rockport Unit 2 DSI, the depreciation rates for Rockport Unit 2 owned assets continue to be based on the life of the Rockport Lease. The expiration date of the Rockport Unit 2 lease is 2022. Depreciation rates for the Rockport Unit 2 DSI are based on a 2025 date that was approved as a part of the settlement in Cause No. 44967.

Nuclear Production Plant

The depreciation rate for Nuclear Production Plant increased from 3.22% to 4.13% mainly due to a $298.7 million increase in the depreciable plant in service balance since the 2016 depreciation study. The increase in depreciable nuclear plant in service since 2016 is mostly due to I&M's LCM program which was detailed in the Company's 2013 order in Cause No. 44812. The LCM program is intended to perform work necessary to allow the Cook Units 1 and 2 to reach the end of their renewed license period in 2034 (Unit 1) and 2037 (Unit 2).

Hydraulic Production Plant

The depreciation rates for Hydraulic Production Plant increased from 2.30% to 2.72% mainly due a $3.3 million increase in the depreciable plant in service balance since the 2016 depreciation study.

Other Production Plant

The depreciation rates for Other Production Plant increased slightly from 5.26% to 5.29% due to a small increase in the depreciable plant in service balance since the 2016 depreciation study.

Transmission Plant

The depreciation rate for Transmission Plant increased from 1.95% to 2.48% due to increases in the net salvage ratio for five accounts (Accounts 353, 354, 355, 356 and 358) and decreases in the average service life for three accounts (Accounts 352, 353, and 355). The depreciation rate increase was partially offset by an increase in the average service life for Account 356.

Distribution Plant

The depreciation rate for Distribution Plant increased slightly from 3.53% to 3.54% due to increases in the net salvage ratio for six accounts (Accounts 361, 362, 364, 365, 369 and 373), decreases in the average service life of two accounts (Accounts 361 and 362), and the updated depreciation rate calculated for Account 370. The increase was offset by increases in the average service life for eight accounts (Accounts 364, 365, 366, 367, 368, 369, 371, and 373).

General Plant

The depreciation rate for General Plant increased from 3.46% to 3.59% due to increases in the net salvage ratio for three accounts (Accounts 390, 391, and 398). The rate increase was partially offset by an increase in the average service life for Account 390.

SCHEDULE I – EXPLANATION OF COLUMN HEADINGS

SCHEDULE I shows the determination of the recommended annual depreciation accrual rate by primary plant accounts by the straight line remaining life method. An explanation of the schedule follows:

Column I	-	Account number.
Column II	-	Account title.
Column III	-	Original Cost at December 31, 2016, adjusted to include 2017 projected additions
Column IV	-	Net Salvage Ratio.
Column V	-	Total to be Recovered (Column III) * (Column IV).
Column VI	-	Calculated Depreciation Requirement.
Column VII	-	Allocated Accumulated Depreciation – I&M's accumulated depreciation (adjusted book reserve) spread to each account on the basis of the Calculated Depreciation Requirement shown in Column VI.
Column VIII	-	Remaining to be Recovered (Column V - Column VII).
Column IX	-	Average Remaining Life.
Column X	-	Recommended Annual Accrual Amount.
Column XI	-	Recommended Annual Accrual Percent or Depreciation Rate (Column X/Column III).

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	NET SALVG RATIO	TOTAL TO BE RECOVERED	CALCULATED DEPRECIATION REQUIREMENT	ALLOCATED ACCUMULATED DEPRECIATION	REMAINING TO BE RECOVERED	AVG REMAIN LIFE	RECOMMENDED ANNUAL ACCRUAL AMOUNT	RECOMMENDED ANNUAL ACCRUAL %
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
STEAM PRODUCTION PLANT										
Rockport Unit 1										
311.0	Structures & Improvements	99,922,816	1.02	101,921,272	79,877,165	43,400,776	58,520,496	8.42	6,950,178	6.96%
312.0	Boiler Plant Equipment	440,760,591	1.02	449,575,803	344,630,469	187,252,886	262,322,917	8.24	31,835,305	7.22%
314.0	Turbogenerator Units	108,306,676	1.02	110,472,810	80,266,270	43,612,194	66,860,616	8.14	8,213,835	7.58%
315.0	Accessory Electrical Equipment	60,207,370	1.02	61,411,517	48,992,380	26,619,714	34,791,803	8.35	4,166,683	6.92%
316.0	Miscellaneous Power Plant Equip.	16,936,021	1.02	17,274,741	12,994,135	7,060,285	10,214,456	8.15	1,253,308	7.40%
	Total Rockport Unit 1	726,133,474	1.02	740,656,143	566,760,419	307,945,855	432,710,288	8.25	52,419,309	7.22%
Rockport ACI										
312.0	Boiler Plant Equipment	11,826,007	1.02	12,062,527	6,750,115	7,167,736	4,894,791	8.24	594,028	5.02%
Rockport Unit 1 DSI										
311.0	Structures & Improvements	2,902,409	1.02	2,960,457	1,244,630	1,218,060	1,742,397	8.42	206,936	7.13%
312.0	Boiler Plant Equipment	51,399,037	1.02	52,427,018	18,633,866	18,236,079	34,190,939	8.24	4,149,386	8.07%
	Total Rockport Unit 1 DSI	54,301,446	1.02	55,387,475	19,878,496	19,454,139	35,933,336	8.25	4,356,321	8.02%
Rockport Unit 1 SCR										
312.0	Boiler Plant Equipment	132,876,074	1.02	135,533,595	31,764,505	24,007,057	111,526,538	8.24	13,534,774	10.19%
316.0	Miscellaneous Power Plant Equip.	8,475	1.02	8,645	1,336	1,010	7,635	8.15	937	11.05%
	Total Rockport Unit 1 SCR	132,884,549	1.02	135,542,240	31,765,841	24,008,067	111,534,173	8.24	13,535,711	10.19%
Rockport Unit 2 Owned Assets										
311.0	Structures & Improvements	4,195,993	1.02	4,279,913	3,932,893	3,765,301	514,612	2.49	206,671	4.93%
312.0	Boiler Plant Equipment	19,732,390	1.02	20,127,038	18,315,897	17,535,403	2,591,635	2.48	1,045,014	5.30%
314.0	Turbogenerator Units	877,807	1.02	895,363	813,636	778,965	116,398	2.47	47,125	5.37%
315.0	Accessory Electrical Equipment	2,107,377	1.02	2,149,525	1,968,090	1,884,224	265,301	2.49	106,546	5.06%
316.0	Miscellaneous Power Plant Equip.	6,926,956	1.02	7,065,495	6,525,193	6,247,136	818,359	2.47	331,319	4.78%
	Total Rockport Unit 2 Owned Assets	33,840,523	1.02	34,517,333	31,555,709	30,211,029	4,306,304	2.48	1,736,676	5.13%
Rockport Unit 2 DSI (2)										
311.0	Structures & Improvements	499,783	1.02	509,779	231,155	198,569	311,210	5.48	56,790	11.36%
312.0	Boiler Plant Equipment	50,859,768	1.02	51,876,963	23,640,330	20,307,734	31,569,229	5.43	5,813,854	11.43%
	Total Rockport Unit 2 DSI	51,359,551	1.02	52,386,742	23,871,485	20,506,303	31,880,439	5.43	5,870,644	11.43%
	Total Rockport Plant	1,010,345,550	1.02	1,030,552,461	680,582,065	409,293,129	621,259,332	7.91	78,512,689	7.77%
Total Steam Production Plant		**1,010,345,550**	**1.02**	**1,030,552,461**	**680,582,065**	**409,293,129**	**621,259,332**	**7.91**	**78,512,689**	**7.77%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	NET SALVG RATIO	TOTAL TO BE RECOVERED	CALCULATED DEPRECIATION REQUIREMENT	ALLOCATED ACCUMULATED DEPRECIATION	REMAINING TO BE RECOVERED	AVG REMAIN LIFE	RECOMMENDED ANNUAL ACCRUAL AMOUNT	RECOMMENDED ANNUAL ACCRUAL %
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
NUCLEAR PRODUCTION PLANT										
Cook Unit 1										
321.0	Structures & Improvements	95,771,743	1.01	96,729,460	67,656,149	51,440,681	45,288,779	14.16	3,198,360	3.34%
322.0	Reactor Plant Equipment	816,377,895	1.02	832,705,453	452,993,796	344,422,639	488,282,814	13.74	35,537,323	4.35%
323.0	Turbogenerator Units	330,139,282	1.04	343,344,853	164,979,030	125,437,729	217,907,124	12.79	17,037,304	5.16%
324.0	Accessory Electrical Equipment	133,380,962	1.00	133,380,962	79,423,657	60,387,815	72,993,147	13.96	5,228,735	3.92%
325.0	Miscellaneous Power Plant Equip.	41,814,683	1.00	41,814,683	20,761,782	15,785,708	26,028,975	13.67	1,904,095	4.55%
	Total Cook Unit 1	1,417,484,565	1.02	1,447,975,412	785,814,414	597,474,572	850,500,840	13.52	62,905,817	4.44%
Cook Unit 2										
321.0	Structures & Improvements	359,960,256	1.01	363,559,859	214,105,001	162,789,447	200,770,412	17.01	11,803,081	3.28%
322.0	Reactor Plant Equipment	936,076,271	1.03	964,158,559	496,355,044	377,391,291	586,767,268	16.40	35,778,492	3.82%
323.0	Turbogenerator Units	409,115,824	1.04	425,480,457	170,966,363	129,990,049	295,490,408	15.01	19,686,236	4.81%
324.0	Accessory Electrical Equipment	162,445,837	1.00	162,445,837	81,932,829	62,295,602	100,150,235	16.72	5,989,847	3.69%
325.0	Miscellaneous Power Plant Equip.	230,889,788	1.00	230,889,788	112,598,146	85,611,218	145,278,570	16.29	8,918,267	3.86%
	Total Cook Unit 2	2,098,487,976	1.02	2,146,534,500	1,075,957,383	818,077,607	1,328,456,893	16.17	82,175,923	3.92%
Total Nuclear Production Plant		**3,515,972,541**	**1.02**	**3,594,509,911**	**1,861,771,797**	**1,415,552,179**	**2,178,957,732**	**15.02**	**145,081,741**	**4.13%**
HYDRAULIC PRODUCTION PLANT										
Berrien Springs										
331.0	Structures & Improvements	604,056	1.05	634,259	337,235	328,480	305,779	16.24	18,829	3.12%
332.0	Reservoirs, Dams & Waterways	5,259,358	1.05	5,522,326	3,602,213	3,508,694	2,013,632	16.35	123,158	2.34%
333.0	Waterwheels, Turbines & Generators	7,386,234	1.05	7,755,546	4,526,912	4,409,385	3,346,161	16.06	208,354	2.82%
334.0	Accessory Electrical Equip.	1,248,463	1.05	1,310,886	819,697	798,416	512,470	15.82	32,394	2.59%
335.0	Misc. Power Plant Equip.	812,900	1.05	853,545	463,219	451,193	402,352	16.19	24,852	3.06%
	Total Berrien Springs	15,311,011	1.05	16,076,562	9,749,276	9,496,168	6,580,394	16.14	407,586	2.66%
Buchanan										
331.0	Structures & Improvements	615,851	1.05	646,644	332,698	324,061	322,583	16.24	19,863	3.23%
332.0	Reservoirs, Dams & Waterways	4,763,884	1.05	5,002,078	3,306,374	3,220,535	1,781,543	16.35	108,963	2.29%
333.0	Waterwheels, Turbines & Generators	1,309,560	1.05	1,375,038	939,013	914,635	460,403	16.06	28,668	2.19%
334.0	Accessory Electrical Equip.	1,034,296	1.05	1,086,011	700,260	682,080	403,931	15.82	25,533	2.47%
335.0	Misc. Power Plant Equip.	290,888	1.05	305,432	158,031	153,928	151,504	16.19	9,358	3.22%
	Total Buchanan	8,014,479	1.05	8,415,203	5,436,376	5,295,239	3,119,964	16.22	192,385	2.40%
Elkhart										
331.0	Structures & Improvements	1,049,160	1.02	1,070,143	746,960	727,568	342,575	10.40	32,940	3.14%
332.0	Reservoirs, Dams & Waterways	7,085,346	1.02	7,227,053	4,654,945	4,534,094	2,692,959	10.44	257,946	3.64%
333.0	Waterwheels, Turbines & Generators	562,493	1.02	573,743	446,200	434,616	139,127	10.32	13,481	2.40%
334.0	Accessory Electrical Equip.	461,490	1.02	470,720	368,197	358,638	112,082	10.23	10,956	2.37%
335.0	Misc. Power Plant Equip.	219,956	1.02	224,355	125,482	122,224	102,131	10.37	9,849	4.48%
	Total Elkhart	9,378,445	1.02	9,566,014	6,341,784	6,177,140	3,388,874	10.42	325,172	3.47%
Twin Branch										
331.0	Structures & Improvements	787,571	1.04	819,074	461,466	449,486	369,588	16.24	22,758	2.89%
332.0	Reservoirs, Dams & Waterways	5,139,969	1.04	5,345,568	3,491,190	3,400,553	1,945,015	16.35	118,961	2.31%
333.0	Waterwheels, Turbines & Generators	6,048,140	1.04	6,290,066	3,873,422	3,772,862	2,517,204	16.06	156,737	2.59%
334.0	Accessory Electrical Equip.	1,673,550	1.04	1,740,492	1,124,706	1,095,507	644,985	15.82	40,770	2.44%
335.0	Misc. Power Plant Equip.	609,399	1.04	633,775	300,409	292,610	341,165	16.19	21,073	3.46%
	Total Twin Branch	14,258,629	1.04	14,828,974	9,251,193	9,011,018	5,817,956	16.15	360,299	2.53%

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO. (I)	ACCOUNT TITLE (II)	ORIGINAL COST (III)	NET SALVG RATIO (IV)	TOTAL TO BE RECOVERED (V)	CALCULATED DEPRECIATION REQUIREMENT (VI)	ALLOCATED ACCUMULATED DEPRECIATION (VII)	REMAINING TO BE RECOVERED (VIII)	AVG REMAIN LIFE (IX)	RECOMMENDED ANNUAL ACCRUAL AMOUNT (X)	RECOMMENDED ANNUAL ACCRUAL % (XI)
Constantine										
331.0	Structures & Improvements	528,763	1.19	629,228	230,738	224,748	404,480	32.43	12,472	2.36%
332.0	Reservoirs, Dams & Waterways	1,889,860	1.19	2,248,933	867,414	844,895	1,404,038	32.88	42,702	2.26%
333.0	Waterwheels, Turbines & Generators	1,134,783	1.19	1,350,392	574,052	559,149	791,243	31.70	24,960	2.20%
334.0	Accessory Electrical Equip.	712,543	1.19	847,926	238,098	231,917	616,009	30.69	20,072	2.82%
335.0	Misc. Power Plant Equip.	543,537	1.19	646,809	126,775	123,484	523,325	32.21	16,247	2.99%
	Total Constantine	4,809,486	1.19	5,723,288	2,037,077	1,984,193	3,739,095	32.11	116,454	2.42%
Mottville										
331.0	Structures & Improvements	758,602	1.04	788,946	458,851	446,939	342,007	13.33	25,657	3.38%
332.0	Reservoirs, Dams & Waterways	2,201,234	1.04	2,289,283	1,527,639	1,487,979	801,304	13.40	59,799	2.72%
333.0	Waterwheels, Turbines & Generators	608,717	1.04	633,066	447,704	436,081	196,985	13.21	14,912	2.45%
334.0	Accessory Electrical Equip.	717,005	1.04	745,685	457,552	445,673	300,012	13.05	22,989	3.21%
335.0	Misc. Power Plant Equip.	384,871	1.04	400,266	184,122	179,342	220,924	13.29	16,623	4.32%
336.0	Roads, Railroads & Bridges	858	1.04	892	726	707	185	13.36	14	1.62%
	Total Mottville	4,671,287	1.04	4,858,138	3,076,594	2,996,721	1,861,417	13.30	139,994	3.00%
Crew Service Center										
331.0	Structures & Improvements	417,303	1.05	438,168	277,755	270,544	167,624	32.43	5,169	1.24%
335.0	Misc. Power Plant Equip.	126,865	1.05	133,208	85,720	83,495	49,713	32.21	1,543	1.22%
	Total Crew Service Center	544,168	1.05	571,376	363,475	354,039	217,337	32.38	6,712	1.23%
Total Hydraulic Production Plant		**56,987,505**	**1.05**	**60,039,556**	**36,255,775**	**35,314,518**	**24,725,038**	**15.97**	**1,548,603**	**2.72%**
OTHER PRODUCTION PLANT										
Deer Creek Solar Facility										
344.0	Generators	6,127,051	1.03	6,310,863	1,419,944	1,283,601	5,027,262	15.50	324,339	5.29%
346.0	Misc. Power Plant Equip.	5,241	1.03	5,398	476	430	4,968	15.50	321	6.12%
	Total Deer Creek Solar Facility	6,132,292		6,316,261	1,420,420	1,284,031	5,032,230	15.50	324,660	5.29%
Olive Solar Facility										
341.0	Structures & Improvements	376,687	1.04	391,754	68,557	61,974	329,780	16.50	19,987	5.31%
344.0	Generators	11,184,837	1.04	11,632,230	2,035,640	1,840,179	9,792,051	16.50	593,458	5.31%
345.0	Accessory Electric Equip.	269,062	1.04	279,824	48,969	44,267	235,557	16.50	14,276	5.31%
346.0	Misc. Power Plant Equip.	215,250	1.04	223,860	39,176	35,414	188,446	16.50	11,421	5.31%
	Total Olive Solar Facility	12,045,836	1.04	12,527,669	2,192,342	1,981,834	10,545,835	16.50	639,142	5.31%
Twin Branch Solar Facility										
344.0	Generators	6,955,324	1.04	7,233,537	1,265,869	1,144,320	6,089,217	16.50	369,043	5.31%
Watervliet Facility										
341.0	Structures & Improvements	358,432	1.03	369,185	64,607	58,403	310,782	16.50	18,835	5.25%
344.0	Generators	11,113,412	1.03	11,446,814	2,003,193	1,810,846	9,635,968	16.50	583,998	5.25%
346.0	Misc. Power Plant Equip.	344,117	1.03	354,441	61,744	55,815	298,626	16.50	18,099	5.26%
	Total Watervliet Facility	11,815,961	1.03	12,170,440	2,129,544	1,925,064	10,245,376	16.50	620,932	5.26%
Total Other Production Plant		**36,949,413**	1.04	**38,247,907**	**7,008,175**	**6,335,249**	**31,912,658**	16.33	**1,953,777**	**5.29%**
Total Production Plant		**4,620,255,009**	**1.02**	**4,723,349,835**	**2,585,617,812**	**1,866,495,075**	**2,856,854,760**	**12.58**	**227,096,810**	**4.92%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	NET SALVG RATIO	TOTAL TO BE RECOVERED	CALCULATED DEPRECIATION REQUIREMENT	ALLOCATED ACCUMULATED DEPRECIATION	REMAINING TO BE RECOVERED	AVG REMAIN LIFE	RECOMMENDED ANNUAL ACCRUAL AMOUNT	RECOMMENDED ANNUAL ACCRUAL %
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
TRANSMISSION PLANT										
350.1	Land Rights	61,153,162	1.00	61,153,162	21,466,239	18,415,148	42,738,014	42.18	1,013,229	1.66%
352.0	Structures & Improvements	31,530,189	1.18	37,205,623	9,439,982	8,098,236	29,107,387	52.24	557,186	1.77%
353.0	Station Equipment	771,531,716	1.05	810,108,302	188,966,644	162,107,985	648,000,317	34.50	18,782,618	2.43%
354.0	Towers & Fixtures	232,965,650	1.37	319,162,941	186,724,290	160,184,346	158,978,595	26.56	5,985,640	2.57%
355.0	Poles & Fixtures	190,169,997	1.59	302,370,295	39,957,377	34,278,059	268,092,236	44.26	6,057,213	3.19%
356.0	OH Conductor & Devices	268,370,909	1.40	375,719,273	160,791,851	137,937,798	237,781,475	37.75	6,298,847	2.35%
357.0	Underground Conduit	2,312,343	1.00	2,312,343	1,179,442	1,011,803	1,300,540	24.50	53,083	2.30%
358.0	Underground Conductor	6,388,692	1.18	7,538,657	2,379,695	2,041,458	5,497,199	44.48	123,588	1.93%
359.0	Roads and Trails	91,159	1.00	91,159	23,153	19,862	71,297	48.49	1,470	1.61%
Total Transmission Plant		**1,564,513,817**	**1.22**	**1,915,661,755**	**610,928,673**	**524,094,695**	**1,391,567,060**	**35.80**	**38,872,874**	**2.48%**
DISTRIBUTION PLANT - IN										
360.1	Land Rights	9,420,428	1.00	9,420,428	2,065,659	2,650,018	6,770,410	50.72	133,486	1.42%
361.0	Structures & Improvements	25,405,825	1.12	28,454,524	2,733,296	2,889,420	25,565,104	63.92	399,955	1.57%
362.0	Station Equipment	303,924,997	1.06	322,160,497	35,462,869	33,949,514	288,210,983	43.67	6,599,748	2.17%
363.0	Storage Battery Equipment	5,606,730	1.00	5,606,730	3,495,091	2,969,377	2,637,353	5.65	466,788	8.33%
364.0	Poles, Towers, & Fixtures	217,616,423	1.81	393,885,726	82,939,315	100,310,325	293,575,401	27.24	10,777,364	4.95%
365.0	Overhead Conductor & Devices	339,581,574	1.13	383,727,179	70,155,217	78,629,459	305,097,720	28.87	10,567,985	3.11%
366.0	Underground Conduit	114,429,095	1.00	114,429,095	18,612,057	18,962,943	95,466,152	46.56	2,050,390	1.79%
367.0	Underground Conductor	226,301,498	1.00	226,301,498	36,278,240	39,336,476	186,965,022	42.54	4,395,040	1.94%
368.0	Line Transformers	286,893,679	1.06	304,107,300	110,213,983	116,032,642	188,074,658	13.32	14,119,719	4.92%
369.0	Services	154,130,235	1.22	188,038,887	48,571,691	53,639,091	134,399,796	29.35	4,579,209	2.97%
370.0	Meters (3)	77,180,235	1.22	94,159,887	35,920,200	35,920,200	58,239,687	**(3)**	7,155,458	9.27%
371.0	Installations on Custs. Prem.	19,146,183	1.23	23,549,805	7,869,175	11,268,970	12,280,835	9.18	1,337,782	6.99%
373.0	Street Lighting & Signal Sys.	16,650,944	1.14	18,982,076	9,391,227	11,302,896	7,679,180	9.14	840,173	5.05%
Total Distribution Plant - IN		**1,796,287,846**	**1.18**	**2,112,823,632**	**463,708,020**	**507,861,331**	**1,604,962,301**	**25.31**	**63,423,096**	**3.53%**
DISTRIBUTION PLANT - MI										
360.1	Land Rights	5,384,064	1.00	5,384,064	1,186,492	1,519,031	3,865,033	50.72	76,291	1.42%
361.0	Structures & Improvements	3,282,455	1.12	3,676,350	472,676	498,654	3,177,696	63.92	51,674	1.57%
362.0	Station Equipment	77,197,587	1.06	81,829,442	8,447,211	8,070,210	73,759,232	43.67	1,676,350	2.17%
363.0	Storage Battery Equipment	0	0.00	0	0	0	0	0.00	0	8.33%
364.0	Poles, Towers, & Fixtures	69,392,240	1.81	125,599,954	32,172,639	38,831,459	86,768,495	27.24	3,436,622	4.95%
365.0	Overhead Conductor & Devices	127,068,042	1.13	143,586,887	22,140,436	24,764,144	118,822,743	28.87	3,954,435	3.11%
366.0	Underground Conduit	11,445,359	1.00	11,445,359	2,606,564	2,650,279	8,795,080	46.56	205,083	1.79%
367.0	Underground Conductor	36,272,133	1.00	36,272,133	11,501,124	12,445,185	23,826,948	42.54	704,447	1.94%
368.0	Line Transformers	48,729,716	1.06	51,653,499	19,895,850	20,903,442	30,750,057	13.32	2,398,275	4.92%
369.0	Services	31,245,932	1.22	38,120,037	11,669,920	12,861,093	25,258,944	29.35	928,317	2.97%
370.0	Meters	17,188,931	1.22	20,970,496	3,040,606	3,040,606	17,929,890	**(3)**	1,593,603	9.27%
371.0	Installations on Custs. Prem.	8,272,344	1.23	10,174,983	3,751,512	5,361,338	4,813,645	9.18	578,005	6.99%
373.0	Street Lighting & Signal Sys.	4,993,344	1.14	5,692,412	3,415,005	4,101,763	1,590,649	9.14	251,954	5.05%
Total Distribution Plant - MI		**440,472,147**	**1.21**	**534,405,616**	**120,300,035**	**135,047,204**	**399,358,412**	**25.19**	**15,855,056**	**3.60%**
Total Distribution Plant		**2,236,759,993**	**1.18**	**2,647,229,248**	**584,008,055**	**642,908,535**	**2,004,320,713**	**25.28**	**79,278,153**	**3.54%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO. (I)	ACCOUNT TITLE (II)	ORIGINAL COST (III)	NET SALVG RATIO (IV)	TOTAL TO BE RECOVERED (V)	CALCULATED DEPRECIATION REQUIREMENT (VI)	ALLOCATED ACCUMULATED DEPRECIATION (VII)	REMAINING TO BE RECOVERED (VIII)	AVG REMAIN LIFE (IX)	RECOMMENDED ANNUAL ACCRUAL AMOUNT (X)	RECOMMENDED ANNUAL ACCRUAL % (XI)
GENERAL PLANT										
390.0	Structures & Improvements	52,218,917	1.02	53,263,295	10,676,075	9,062,229	44,201,066	40.78	1,083,891	2.08%
391.0	Office Furniture & Equipment	6,031,461	0.96	5,790,203	2,293,538	1,946,836	3,843,367	13.29	289,192	4.79%
393.0	Stores Equipment	916,170	1.00	916,170	147,645	125,326	790,844	11.74	67,363	7.35%
394.0	Tools Shop & Garage Equipment	15,579,484	1.00	15,579,484	6,858,302	5,821,568	9,757,916	8.96	1,089,053	6.99%
395.0	Laboratory Equipment	240,988	0.99	238,578	91,062	77,297	161,281	12.37	13,038	5.41%
396.0	Power Operated Equipment	543,715	1.00	543,715	312,176	264,986	278,729	10.65	26,172	4.81%
397.0	Communication Equipment	53,739,725	1.00	53,739,725	14,551,977	12,352,230	41,387,495	19.69	2,101,955	3.91%
398.0	Miscellaneous Equipment	10,377,695	0.92	9,547,479	3,392,533	2,879,702	6,667,777	19.34	344,766	3.32%
Total General Plant		**139,648,155**	**1.00**	**139,618,649**	**38,323,308**	**32,530,174**	**107,088,475**	**21.35**	**5,015,431**	**3.59%**
	Total Depreciable Plant	**8,561,176,974**	**1.10**	**9,425,859,487**	**3,818,877,848**	**3,066,028,479**	**6,359,831,008**	**18.16**	**350,263,268**	**4.09%**

Notes:

(1) Production Plant original cost includes 2019 forecasted plant additions totaling $336,557,680. A corresponding adjustment was made to Production Plant accumulated depreciation that includes an additional year of depreciation using the expected plant balances at 12/31/2019.

(2) Rockport Unit 2 DSI depreciation rates are calculated using a 2025 retirement date as approved in Cause No. 44967.

(3) The depreciation rate for Distribution Account 370, Meters, was calculated to include AMI Meter deployment set to begin in 2020 along with the expected retirement of the current meters. The depreciation rate that was calculated is based on a 15 year service life of the AMI Meters to be installed.

(4) The Company proposes that a depreciation rate of 12.00% be established when the Rockport Unit 2 SCR is placed in service in 2020. This will allow the investment in the Rockport Unit 2 SCR (plus an estimate for net salvage) to be depreciated over the remaining life of Rockport Unit 1, or through 2028.

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
STEAM PRODUCTION PLANT							
Rockport Unit 1							
311.0	Structures & Improvements	99,922,816	6.72%	6,714,813	6.96%	6,950,178	235,365
312.0	Boiler Plant Equipment	440,760,591	7.66%	33,762,261	7.22%	31,835,305	(1,926,956)
314.0	Turbogenerator Units	108,306,676	7.23%	7,830,573	7.58%	8,213,835	383,262
315.0	Accessory Electrical Equipment	60,207,370	6.76%	4,070,018	6.92%	4,166,683	96,665
316.0	Miscellaneous Power Plant Equipment	16,936,021	7.17%	1,214,313	7.40%	1,253,308	38,995
	Total Rockport Unit 1	726,133,474	7.38%	53,591,978	7.22%	52,419,309	(1,172,669)
Rockport ACI							
312.0	Boiler Plant Equipment	11,826,007	5.62%	664,622	5.02%	594,028	(70,594)
Rockport Unit 1 - DSI							
311.0	Structures & Improvements	2,902,409	7.85%	227,839	7.13%	206,936	(20,903)
312.0	Boiler Plant Equipment	51,399,037	8.77%	4,507,696	8.07%	4,149,386	(358,310)
	Total Rockport Unit 1 - DSI	54,301,446	8.72%	4,735,535	8.02%	4,356,321	(379,214)
Rockport U1 SCR							
312.0	Boiler Plant Equipment	132,876,074	7.66%	10,178,307	10.19%	13,534,774	3,356,467
316.0	Miscellaneous Power Plant Equipment	8,475	7.17%	608	11.05%	937	329
	Total Rockport Unit 1 - SCR	132,884,549	7.66%	10,178,915	10.19%	13,535,711	3,356,796
Rockport Unit 2 Owned Assets							
311.0	Structures & Improvements	4,195,993	3.45%	144,762	4.93%	206,671	61,909
312.0	Boiler Plant Equipment	19,732,390	3.76%	741,938	5.30%	1,045,014	303,076
314.0	Turbogenerator Units	877,807	3.98%	34,937	5.37%	47,125	12,188
315.0	Accessory Electrical Equipment	2,107,377	3.66%	77,130	5.06%	106,546	29,416
316.0	Miscellaneous Power Plant Equipment	6,926,956	3.36%	232,746	4.78%	331,319	98,573
	Total Rockport Unit 2 Owned Assets	33,840,523	3.64%	1,231,513	5.13%	1,736,676	505,163
Rockport Unit 2 - DSI (2)							
311.0	Structures & Improvements	499,783	10.56%	52,777	11.36%	56,790	4,013
312.0	Boiler Plant Equipment	50,859,768	10.79%	5,487,769	11.43%	5,813,854	326,085
	Total Rockport Unit 2 - DSI	51,359,551	10.79%	5,540,546	11.43%	5,870,644	330,098
	Total Rockport Plant	1,010,345,550	7.52%	75,943,109	7.77%	78,512,689	2,569,580
Total Steam Production Plant		**1,010,345,550**	**7.52%**	**75,943,109**	**7.77%**	**78,512,689**	**2,569,580**

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NUCLEAR PRODUCTION PLANT							
Cook Unit 1							
321.0	Structures & Improvements	95,771,743	2.24%	2,145,287	3.34%	3,198,360	1,053,073
322.0	Reactor Plant Equipment	816,377,895	3.25%	26,532,282	4.35%	35,537,323	9,005,041
323.0	Turbogenerator Units	330,139,282	4.01%	13,238,585	5.16%	17,037,304	3,798,719
324.0	Accessory Electrical Equipment	133,380,962	2.79%	3,721,329	3.92%	5,228,735	1,507,406
325.0	Miscellaneous Power Plant Equipment	41,814,683	3.59%	1,501,147	4.55%	1,904,095	402,948
	Total Cook Unit 1	1,417,484,565	3.33%	47,138,630	4.44%	62,905,817	15,767,187
Cook Unit 2							
321.0	Structures & Improvements	359,960,256	2.56%	9,214,983	3.28%	11,803,081	2,588,098
322.0	Reactor Plant Equipment	936,076,271	3.01%	28,175,896	3.82%	35,778,492	7,602,596
323.0	Turbogenerator Units	409,115,824	4.10%	16,773,749	4.81%	19,686,236	2,912,487
324.0	Accessory Electrical Equipment	162,445,837	2.94%	4,775,908	3.69%	5,989,847	1,213,939
325.0	Miscellaneous Power Plant Equipment	230,889,788	3.15%	7,273,028	3.86%	8,918,267	1,645,239
	Total Cook Unit 2	2,098,487,976	3.16%	66,213,564	3.92%	82,175,923	15,962,359
Total Nuclear Production Plant		**3,515,972,541**	**3.22%**	**113,352,194**	**4.13%**	**145,081,741**	**31,729,547**
HYDRAULIC PRODUCTION PLANT							
Berrien Springs							
331.0	Structures & Improvements	604,056	2.57%	15,524	3.12%	18,829	3,305
332.0	Reservoirs, Dams & Waterways	5,259,358	1.89%	99,402	2.34%	123,158	23,756
333.0	Waterwheels, Turbines & Generators	7,386,234	2.41%	178,008	2.82%	208,354	30,346
334.0	Accessory Electrical Equip.	1,248,463	2.16%	26,967	2.59%	32,394	5,427
335.0	Misc. Power Plant Equip.	812,900	2.68%	21,786	3.06%	24,852	3,066
	Total Berrien Springs	15,311,011	2.23%	341,687	2.66%	407,586	65,899
Buchanan							
331.0	Structures & Improvements	615,851	2.86%	17,613	3.23%	19,863	2,250
332.0	Reservoirs, Dams & Waterways	4,763,884	1.72%	81,939	2.29%	108,963	27,024
333.0	Waterwheels, Turbines & Generators	1,309,560	1.72%	22,524	2.19%	28,668	6,144
334.0	Accessory Electrical Equip.	1,034,296	2.02%	20,893	2.47%	25,533	4,640
335.0	Misc. Power Plant Equip.	290,888	2.60%	7,563	3.22%	9,358	1,795
	Total Buchanan	8,014,479	1.88%	150,532	2.40%	192,385	41,853
Elkhart							
331.0	Structures & Improvements	1,049,160	3.49%	36,616	3.14%	32,940	(3,676)
332.0	Reservoirs, Dams & Waterways	7,085,346	3.32%	235,233	3.64%	257,946	22,713
333.0	Waterwheels, Turbines & Generators	562,493	3.01%	16,931	2.40%	13,481	(3,450)
334.0	Accessory Electrical Equip.	461,490	3.17%	14,629	2.37%	10,956	(3,673)
335.0	Misc. Power Plant Equip.	219,956	4.61%	10,140	4.48%	9,849	(291)
	Total Elkhart	9,378,445	3.34%	313,549	3.47%	325,172	11,623
Twin Branch							
331.0	Structures & Improvements	787,571	1.97%	15,515	2.89%	22,758	7,243
332.0	Reservoirs, Dams & Waterways	5,139,969	1.87%	96,117	2.31%	118,961	22,844
333.0	Waterwheels, Turbines & Generators	6,048,140	2.18%	131,849	2.59%	156,737	24,888
334.0	Accessory Electrical Equip.	1,673,550	1.96%	32,802	2.44%	40,770	7,968
335.0	Misc. Power Plant Equip.	609,399	3.06%	18,648	3.46%	21,073	2,425
	Total Twin Branch	14,258,629	2.07%	294,931	2.53%	360,299	65,368

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)

IN

ACCOUNT NO. (1)	ACCOUNT TITLE (2)	ORIGINAL COST (3)	CURRENT INDIANA APPROVED RATE (4)	ANNUAL ACCRUAL (5)	STUDY RATE (6)	STUDY ACCRUAL (7)	DIFFERENCE (DECREASE) (8)
Constantine							
331.0	Structures & Improvements	528,763	1.90%	10,046	2.36%	12,472	2,426
332.0	Reservoirs, Dams & Waterways	1,889,860	1.89%	35,718	2.26%	42,702	6,984
333.0	Waterwheels, Turbines & Generators	1,134,783	1.81%	20,540	2.20%	24,960	4,420
334.0	Accessory Electrical Equip.	712,543	2.12%	15,106	2.82%	20,072	4,966
335.0	Misc. Power Plant Equip.	543,537	2.62%	14,241	2.99%	16,247	2,006
	Total Constantine	4,809,486	1.99%	95,651	2.42%	116,454	20,803
Mottville							
331.0	Structures & Improvements	758,602	2.19%	16,613	3.38%	25,657	9,044
332.0	Reservoirs, Dams & Waterways	2,201,234	2.21%	48,647	2.72%	59,799	11,152
333.0	Waterwheels, Turbines & Generators	608,717	1.88%	11,444	2.45%	14,912	3,468
334.0	Accessory Electrical Equip.	717,005	2.17%	15,559	3.21%	22,989	7,430
335.0	Misc. Power Plant Equip.	384,871	4.03%	15,510	4.32%	16,623	1,113
336.0	Roads, Railroads & Bridges	858	0.98%	8	1.62%	14	6
	Total Mottville	4,671,287	2.31%	107,781	3.00%	139,994	32,213
Crew Service Center							
331.0	Structures & Improvements	417,303	1.00%	4,173	1.24%	5,169	996
335.0	Misc. Power Plant Equip.	126,865	0.97%	1,231	1.22%	1,543	312
	Total Crew Service Center	544,168	0.99%	5,404	1.23%	6,712	1,308
Total Hydraulic Production Plant		**56,987,505**	**2.30%**	**1,309,535**	**2.72%**	**1,548,603**	**239,068**
OTHER PRODUCTION PLANT							
Deer Creek Solar Facility							
344.0	Generators	6,127,051	5.35%	327,797	5.29%	324,339	(3,458)
346.0	Misc. Power Plant Equip.	5,241	5.35%	280	6.12%	321	41
	Total Deer Creek Solar Facility	6,132,292	5.35%	328,077	5.29%	324,660	(3,417)
Olive Solar Facility							
341.0	Structures & Improvements	376,687	5.28%	19,889	5.31%	19,987	98
344.0	Generators	11,184,837	5.27%	589,441	5.31%	593,458	4,017
345.0	Accessory Electric Equip.	269,062	5.25%	14,126	5.31%	14,276	150
346.0	Misc. Power Plant Equip.	215,250	5.29%	11,387	5.31%	11,421	34
	Total Olive Solar Facility	12,045,836	5.27%	634,843	5.31%	639,142	4,299
Twin Branch Solar Facility							
344.0	Generators	6,955,324	5.27%	366,546	5.31%	369,043	2,497
Watervliet Facility							
341.0	Structures & Improvements	358,432	5.23%	18,746	5.25%	18,835	89
344.0	Generators	11,113,412	5.21%	579,009	5.25%	583,998	4,989
346.0	Misc. Power Plant Equip.	344,117	5.24%	18,032	5.26%	18,099	67
	Total Watervliet Facility	11,815,961	5.21%	615,787	5.26%	620,932	5,145
Total Other Production Plant		**36,949,413**	**5.26%**	**1,945,253**	**5.29%**	**1,953,777**	**8,524**
Total Production Plant		**4,620,255,009**	**4.17%**	**192,550,091**	**4.92%**	**227,096,810**	**34,546,719**

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TRANSMISSION PLANT							
350.1	Land Rights	61,153,162	1.48%	905,067	1.66%	1,013,229	108,162
352.0	Structures & Improvements	31,530,189	1.55%	488,718	1.77%	557,186	68,468
353.0	Station Equipment	771,531,716	1.86%	14,350,490	2.43%	18,782,618	4,432,128
354.0	Towers & Fixtures	232,965,650	1.69%	3,937,119	2.57%	5,985,640	2,048,521
355.0	Poles & Fixtures	190,169,997	2.85%	5,419,845	3.19%	6,057,213	637,368
356.0	OH Conductor & Devices	268,370,909	1.97%	5,286,907	2.35%	6,298,847	1,011,940
357.0	Underground Conduit	2,312,343	1.86%	43,010	2.30%	53,083	10,073
358.0	Underground Conductor	6,388,692	1.70%	108,608	1.93%	123,588	14,980
359.0	Roads and Trails	91,159	1.50%	1,367	1.61%	1,470	103
Total Transmission Plant		**1,564,513,817**	**1.95%**	**30,541,131**	**2.48%**	**38,872,874**	**8,331,743**
DISTRIBUTION PLANT - IN							
360.1	Land Rights	9,420,428	1.50%	141,306	1.42%	133,486	(7,820)
361.0	Structures & Improvements	25,405,825	1.44%	365,844	1.57%	399,955	34,111
362.0	Station Equipment	303,924,997	2.03%	6,169,677	2.17%	6,599,748	430,071
363.0	Storage Battery Equipment	5,606,730	6.08%	340,889	8.33%	466,788	125,899
364.0	Poles, Towers, & Fixtures	217,616,423	5.25%	11,424,862	4.95%	10,777,364	(647,498)
365.0	Overhead Conductor & Devices	339,581,574	3.27%	11,104,317	3.11%	10,567,985	(536,332)
366.0	Underground Conduit	114,429,095	1.84%	2,105,495	1.79%	2,050,390	(55,105)
367.0	Underground Conductor	226,301,498	1.96%	4,435,509	1.94%	4,395,040	(40,469)
368.0	Line Transformers	286,893,679	5.00%	14,344,684	4.92%	14,119,719	(224,965)
369.0	Services	154,130,235	3.05%	4,700,972	2.97%	4,579,209	(121,763)
370.0	Meters (3)	77,180,235	6.78%	5,232,820	9.27%	7,155,458	1,922,638
371.0	Installations on Custs. Prem.	19,146,183	9.04%	1,730,815	6.99%	1,337,782	(393,033)
373.0	Street Lighting & Signal Sys.	16,650,944	5.57%	927,458	5.05%	840,173	(87,285)
Total Distribution Plant - IN		**1,796,287,846**	**3.51%**	**63,024,648**	**3.53%**	**63,423,096**	**398,448**
DISTRIBUTION PLANT - MI							
360.1	Land Rights	5,384,064	1.50%	80,761	1.42%	76,291	(4,470)
361.0	Structures & Improvements	3,282,455	1.44%	47,267	1.57%	51,674	4,407
362.0	Station Equipment	77,197,587	2.03%	1,567,111	2.17%	1,676,350	109,239
363.0	Storage Battery Equipment	0	6.08%	0	8.33%	0	0
364.0	Poles, Towers, & Fixtures	69,392,240	5.25%	3,643,093	4.95%	3,436,622	(206,471)
365.0	Overhead Conductor & Devices	127,068,042	3.27%	4,155,125	3.11%	3,954,435	(200,690)
366.0	Underground Conduit	11,445,359	1.84%	210,595	1.79%	205,083	(5,512)
367.0	Underground Conductor	36,272,133	1.96%	710,934	1.94%	704,447	(6,487)
368.0	Line Transformers	48,729,716	5.00%	2,436,486	4.92%	2,398,275	(38,211)
369.0	Services	31,245,932	3.05%	953,001	2.97%	928,317	(24,684)
370.0	Meters	17,188,931	6.78%	1,165,410	9.27%	1,593,603	428,193
371.0	Installations on Custs. Prem.	8,272,344	9.04%	747,820	6.99%	578,005	(169,815)
373.0	Street Lighting & Signal Sys.	4,993,344	5.57%	278,129	5.05%	251,954	(26,175)
Total Distribution Plant - MI		**440,472,147**	**3.63%**	**15,995,732**	**3.60%**	**15,855,056**	**(140,676)**
Total Distribution Plant		**2,236,759,993**	**3.53%**	**79,020,380**	**3.54%**	**79,278,153**	**257,773**

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2018 (1)

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GENERAL PLANT							
390.0	Structures & Improvements	52,218,917	2.03%	1,060,044	2.08%	1,083,891	23,847
391.0	Office Furniture & Equipment	6,031,461	4.65%	280,463	4.79%	289,192	8,729
393.0	Stores Equipment	916,170	4.10%	37,563	7.35%	67,363	29,800
394.0	Tools Shop & Garage Equipment	15,579,484	6.65%	1,036,036	6.99%	1,089,053	53,017
395.0	Laboratory Equipment	240,988	5.41%	13,037	5.41%	13,038	1
396.0	Power Operated Equipment	543,715	4.31%	23,434	4.81%	26,172	2,738
397.0	Communication Equipment	53,739,725	3.82%	2,052,857	3.91%	2,101,955	49,098
398.0	Miscellaneous Equipment	10,377,695	3.14%	325,860	3.32%	344,766	18,906
Total General Plant		**139,648,155**	**3.46%**	**4,829,294**	**3.59%**	**5,015,431**	**186,137**
	Total Depreciable Plant	**8,561,176,974**	**3.59%**	**306,940,896**	**4.09%**	**350,263,268**	**43,322,372**

Notes:

(1) Production Plant original cost includes 2019 forecasted plant additions totaling $336,557,680. Production Plant accumulated depreciation was adjusted to include an additional year of depreciation using the expected plant balances at 12/31/2019.

(2) Rockport Unit 2 DSI depreciation rates are calculated using a 2025 retirement date as approved in Cause No. 44967.

(3) The depreciation rate for Distribution Account 370, Meters, was calculated to include AMI Meter deployment set to begin in 2020 along with the expected retirement of the current meters. The depreciation rate that was calculated is based on a 15 year service life of the AMI Meters to be installed.

(4) The Company proposes that a depreciation rate of 12.00% be established when the Rockport Unit 2 SCR is placed in service in 2020. This will allow the investment in the Rockport Unit 2 SCR (plus an estimate for net salvage) to be depreciated over the remaining life of Rockport Unit 1, or through 2028.

INDIANA MICHIGAN POWER COMPANY
SCHEDULE III - COMPARISON OF MORTALITY CHARACTERISTICS
DEPRECIATION STUDY AS OF DECEMBER 31, 2018

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		Existing Rates					Study Rates				
		Average Service Life (Years)	Iowa Curve	Salvage Factor	Cost of Removal Factor	Net Salvage Factor	Average Service Life (Years)	Iowa Curve	Salvage Factor	Cost of Removal Factor	Net Salvage Factor
TRANSMISSION PLANT											
350.1	Rights of Way	65	R5.0	0%	0%	0%	65	R5.0	0%	0%	0%
352.0	Structures & Improvements	73	R3.5	0%	18%	-18%	70	L2.0	0%	18%	-18%
353.0	Station Equipment	51	L0.5	23%	20%	3%	45	L1.0	16%	21%	-5%
354.0	Towers & Fixtures	64	R5.0	5%	25%	-20%	64	R5.0	4%	41%	-37%
355.0	Poles & Fixtures	53	L0.5	9%	62%	-53%	51	L0.5	5%	64%	-59%
356.0	OH Cond. & Devices	64	R4.0	18%	52%	-34%	66	R4.0	13%	53%	-40%
357.0	Underground Conduit	50	L5.0	0%	0%	0%	50	L5.0	0%	0%	0%
358.0	Underground Conductor and Devices	65	L2.5	2%	32%	-30%	65	L2.5	1%	19%	-18%
359.0	Roads and Trails	65	R5.0	0%	0%	0%	65	R5.0	0%	0%	0%
DISTRIBUTION PLANT											
360.1	Rights of Way	65	R5.0	0%	0%	0%	65	R5.0	0%	0%	0%
361.0	Structures & Improvements	75	R2.0	3%	13%	-10%	71	R2.0	2%	14%	-12%
362.0	Station Equipment	50	L0.0	16%	19%	-3%	49	L0.0	13%	19%	-6%
363.0	Storage Battery Equipment	15	SQ	0%	0%	0%	15	SQ	0%	0%	0%
364.0	Poles, Towers, & Fixtures	33	L0.0	21%	99%	-78%	35	L0.0	19%	100%	-81%
365.0	Overhead Conductor & Devices	33	L0.0	23%	33%	-10%	35	L0.0	20%	33%	-13%
366.0	Underground Conduit	53	R2.0	0%	0%	0%	56	R2.0	0%	0%	0%
367.0	Underground Conductor	50	R1.0	0%	0%	0%	52	R1.0	0%	0%	0%
368.0	Line Transformers	20	R0.5	19%	25%	-6%	21	R0.5	18%	24%	-6%
369.0	Services	38	R0.5	4%	24%	-20%	40	R0.5	4%	26%	-22%
370.0	Meters	15	SQ	10%	32%	-22%	15	SQ	10%	32%	-22%
371.0	Installations on Custs. Prem.	13	L0.0	3%	26%	-23%	14	L0.0	3%	26%	-23%
373.0	Street Lighting & Signal Sys.	18	R0.5	8%	20%	-12%	19	R0.5	8%	22%	-14%
GENERAL PLANT											
390.0	Structures & Improvements	50	L0.5	15%	14%	1%	51	L0.5	11%	13%	-2%
391.0	Office Furniture & Equipment	22	SQ	10%	5%	5%	22	SQ	7%	3%	4%
393.0	Stores Equipment	14	SQ	0%	0%	0%	14	SQ	0%	0%	0%
394.0	Tools Shop & Garage Equipment	16	SQ	1%	1%	0%	16	SQ	1%	1%	0%
395.0	Laboratory Equipment	20	SQ	2%	1%	1%	20	SQ	2%	1%	1%
396.0	Power Operated Equipment	25	SQ	2%	2%	0%	25	SQ	2%	2%	0%
397.0	Communication Equipment	27	SQ	7%	7%	0%	27	SQ	6%	6%	0%
398.0	Miscellaneous Equipment	30	SQ	27%	18%	9%	30	SQ	25%	17%	8%

INDIANA MICHIGAN POWER COMPANY
SCHEDULE IV - ESTIMATED GENERATION PLANT RETIREMENT DATES
DEPRECIATION STUDY AS OF DECEMBER 31, 2018

Plant	Capacity (MW)	Fuel	Year Installed	Estimated Year Retired	Life Span (Years)
Steam Production Plant					
Rockport					
Unit 1	1,300	Coal	1984	2028	44
Unit 2 - leased unit (a)	1,300	Coal	1989	2022	33
Nuclear Production Plant					
Cook					
Unit 1	1,020	Nuclear	1975	2034	59
Unit 2	1,090	Nuclear	1978	2037	59
Hydraulic Production Plant (b)					
Berrien Springs	7.2	Hydro	1908	2036	128
Buchanan	4.1	Hydro	1919	2036	117
Constantine	1.2	Hydro	1921	2053	132
Elkhart	3.4	Hydro	1913	2030	117
Mottville	1.7	Hydro	1923	2033	110
Twin Branch	4.8	Hydro	1904	2036	132
Other Production Plant (c)					
Deer Creek Solar Facility	2.5	Solar	2015	2035	20
Olive Solar Facility	5.0	Solar	2016	2036	20
Twin Branch Solar Facility	2.6	Solar	2016	2036	20
Watervliet Solar Facility	4.6	Solar	2016	2036	20

NOTES:

(a) The life span for the associated owned equipment at Rockport Unit 2 is based on the 2022 expiration date of the lease, in accordance with Generally Accepted Accounting Principles.

(b) The estimated retirement year for the Company's Hydraulic Production Plants assumes that the plants will be retired at their end of their current FERC license year except for Constantine Plant where the Company is in the process of filing for a 30 year license extension. Berrien Springs is not FERC licensed and the Berrien Springs retirement year was assumed to be the same year as Buchanan and Twin Branch Plants which is 2036.

(c) The Deer Creek Solar facility was placed in service in 2015. The Olive, Twin Branch and Watervliet Solar facilities were placed in service in 2016. The estimated retirement date was based on the Company's expected 20 year service life of the facility as documented in the order in Cause No. 44511.

Brandenburg®

Rockport Power Plant

Rockport, IN

September 27, 2018

Conceptual Dismantlement Cost

American Electric Power Company
Rockport Plant
ROCKPORT, IN

Dismantling Information **September 27, 2018**

ROCKPORT AEP POWER PLANT
CONCEPTUAL DEMOLITION PLAN

DEFINITIONS:

Concrete Debris

Concrete stacks, cooling towers, turbine pedestals, and elevated floor slabs (estimated 66,200 cubic yards)

Construction / Demolition Debris

Any solid waste resulting from the construction, remodeling, repair, or demolition of structures. Such wastes may include, but not limited to;
roof material/drywall/ceiling tiles/fiberglass (estimated 16,342 yards)

Contractor

The individual, partnership or corporation with which AEP Company enters into a contract to perform all of the work described in the Specification.

Contract

A purchase order placed by Purchaser and accepted by Contractor, together with this Specification and all other documents referred to in such purchase order, or a formal contract executed by Purchaser and Contractor, together with this Specification and all other documents referred to in such formal contract.

Engineer

The Engineer or his authorized representative designated by AEP Company to be assigned to this contract.

Fill Material

Material to be used to bring area to grade.

Greases

Any used or unused greases or waste containing grease.

Hazardous Waste

Hazardous waste as defined in 40 CFR 261.3 or as defined in any applicable state regulation.

HAZMATs

Any hazardous, toxic or regulated substance controlled under RCRA, CERCLA or any other Federal, State, or Local law, statute, regulation or ordinance pertaining to the handling, transportation, or disposal of any controlled substance.

SDS

Safety Data Sheet.

Non-Ferrous Scrap (estimated 1,836,829 lbs)
All non-ferrous scrap such as copper or brass

Oils (estimated 15,000 gallons)
Any used or unused hydraulic, lubrication, rolling, waste or other such oil or oily waste.

OSHA
Occupational Safety and Health Act and amendments thereto.

PCBs
Polychlorinated By-phenols (plant personnel verified that there are no PCB's present at the site).

Process Materials
Any raw materials, blended raw materials, recyclable process generated dusts (such as flue dust), fly ash, ash slurry and etc.

SCR Unit
Selective Catalytic Reduction Unit

Scrap Ferrous (estimated 132,374 tons)
All ferrous scrap designated by the Engineer to be suitable for melting at a steel processing plant.

Structural Removal
As in the Specification, shall mean all work of every nature described herein, implied herein, or necessary to complete the work described or implied herein, with the exception of Asbestos Abatement.

AEP Company
American Electric Power Company

American Electric Power Company
Rockport Plant
ROCKPORT, IN

Information Sheets

Dismantling Information **September 27, 2018**

ROCKPORT PLANT

1. GENERAL SCOPE OF WORK

1.1. The work to be performed under the terms of this specification shall consist of the dismantling and removal of all facilities, machinery, equipment, all associated structures, foundations, debris, asbestos containing materials, hazardous substances and hazardous waste as directed by the Engineer. Upon completion each dismantling site shall be left in a neat, clean, safe condition.

1.2. Work under this specification shall be performed in accordance with the terms and conditions of the Contract, entered into between AEP Company and the Contractor, and in accordance with all EPA, OSHA, Federal, State, County, and Local laws, statutes, ordinances, and regulations.

1.3. The Contractor shall perform all utility disconnection and/or relocation work which is necessary to complete the proposed dismantling and removal work, without disrupting active utilities.

1.4. The Contractor shall perform all excavation, back-filling, construction and closure work which is necessary to complete the proposed dismantling work.

1.5. The Contractor shall provide all labor, materials, equipment, services and pay all necessary taxes, in addition to securing all required permits, to perform the dismantling.

1.6. The Contractor is responsible to clean up and dispose of any and all materials which are generated as a result of a spill caused by the Contractor, or which are generated as a result of the improper handling of any materials by the Contractor. This includes all RACM, Hazardous Substances, Hazardous Waste, Special wastes, Non-process Debris, Demolition Debris, and combustible materials.

1.7. The switchyard(s) shall remain intact following the razing efforts.

2. FACILITY DISMANTLEMENT AND RELATED WORK

2.1. Perform the environment abatement of the following:

2.1.1. Vacuum, transport and dispose of dust accumulations inside area of Unit 1 and 2 Boiler

2.1.2. HAZMAT sweep of structures, tanks and pipe in Unit 1 and 2 Boiler area

2.1.3. Remove Units 1 and 2 fluorescent light bulbs, PCB ballast, mercury vapor light, HID vapor lights and mercury containing instruments.

2.1.4. Remove office, storage and maintenance building fluorescent light bulbs, PCB ballast, mercury vapor light, HID vapor lights and mercury containing instruments.

2.2. Perform the building dismantling, equipment removal, concrete removal to surrounding grade elevation of the following.

2.2.1. Unit 1 boiler building, turbine generator building, precipitators, SCR unit, office and maintenance building, coal conveyor.

2.2.2. Unit 2 boiler building, turbine generator building, precipitators, office and maintenance building, coal conveyor.

2.2.3. Concrete stack for Unit 1 and 2

2.2.4. Unit 1 water-cooling tower structure, adjacent pump structures, adjacent condensate water tank to surround grade elevation. Fill the pits and trenches to surround grade elevation.

2.2.5. Unit 2 water-cooling tower structure, adjacent pump structures, adjacent condensate water tank to surround grade elevation. Fill the pits and trenches to surround grade elevation.

2.2.6. The ammonia storage building and chemical manufacturing building structure and ammonia storage tank structures.

2.2.7. The multiple single story maintenance, storage and office buildings located throughout the site.

2.2.8. The condensate storage tanks

2.2.9. Pre-Treatment Building

2.2.10. Service Building

2.2.11. Fly Ash Silos

2.2.12. The coal barge unloading station(s), the coal crusher house, car dumper building, coal conveyors, and coal transfer stations.

2.2.13. Brandenburg shall remove the existing site asphalt and concrete parking lots, roadways, and sidewalks.

2.2.14. The concrete dock river cells shall have the sheet piling, and the concrete cap removed.

2.2.15. The Clearwater Pond filled in with existing berm material and crushed concrete from the demolition efforts.

3. WORK BY CONTRACTOR

The Contractor Shall:

3.1. Furnish all supervision, labor, materials, tools, supplies and equipment necessary to perform the work, including dismantling and removal of all the facilities, equipment, structures, etc. noted herein with the exception of specific structures which are designated in this Specification to remain.

3.2. Furnish on the site, during the performance of the work, an experienced supervisor who shall be duly authorized to represent and act for the Contractor in all matters pertaining to the work covered by this Specification.

3.3. Provide all written instructions, orders, and other communications delivered to the Contractor’s construction office shall be considered as having been delivered to the Contractor himself.

3.4. Develop detailed written demolition plans for each area to be dismantled, and submit them to the Engineer for his review prior to the start of work in an area. Such plans shall include, but limited to:

3.4.1. A detailed and complete schedule for the performance of the work.

3.4.2. A survey of each area, identifying all materials to be disposed of other than scrap and equipment.

3.4.3. Identification and protection of demolition areas.

3.4.4. Termination and/or relocation of utilities.

3.4.5. Handling and disposal of hazardous wastes and materials.

3.4.6. Handling and disposal of oils and greases.

3.4.7. Handling and disposal of non-hazardous debris and materials.

3.4.8. Fire prevention and protection.

3.4.9. Handling and storage locations for ferrous and non-ferrous scrap.

3.4.10. Method of demolition and/or equipment removal.

3.4.11. Clean-out, breaking open, and filling of basements, pits, and tunnels.

3.4.12. Final grading and restoration of demolition site.

3.5. Clear each site of existing equipment, structures, and material designated to be removed. Each site will be left in a neat, clean, safe condition in conformity with all applicable Federal, State, or Local laws, statutes and/or regulations, including but not limited to CAA, OSHA, RCRA, SARA, TSCA, and/or CERCLA. The finished condition of each site will be approved by the Engineer.

3.6. Remove all structures down to final grade except where otherwise noted. Final grade will generally be the adjacent grade surrounding the facility to be removed. The removal of concrete & debris and grading will be done concurrent with the demolition work. As one area is cleared of structures, the required concrete removal work in that area will be done simultaneously with the demolition of structures in the next area of work. If the Contractor breaches the provisions of this section AEP Company reserves the right, in AEP Company's sole opinion, to stop the Contractor from doing further demolition until the concrete and debris removal is current.

3.7. Perform all material removal work in accordance with all applicable Federal, State, and/or Local rules, regulations and/or ordinances, which is necessary to complete the proposed removal work.

3.8. Perform all utility, telecommunications and telemetering disconnection and/or relocation work which is necessary to complete the proposed removal work.

3.9. Prior to beginning demolition of any facility, Contractor shall ascertain that no live utilities remain in the facility and identify and locate all underground utilities. It shall be the Contractor's exclusive responsibility to determine that all utility systems in each area remain isolated from active utility systems.

3.10. Perform all excavation, back–filling, construction and closure work which is necessary to complete the proposed dismantling and removal work.

3.11. Remove all debris generated as a result of the proposed removal work.

3.12. Break the floors of all pits, trenches and depressions sufficiently to provide drainage and to prevent the accumulation of water within the underground structure.

3.13. Tunnel and basement roof structures which do not support structures designated to remain and which are located less than 3 feet below finish grade elevation will be broken in. Said tunnel excavations will be filled with fill materials approved by the Site Engineer up to finish grade elevation.

3.14. Properly drain and capture all contents of pipelines prior to dismantling any pipelines.

3.15. Empty and shovel clean all pits, sumps, basements, and depressions to the satisfaction of the Engineer.

Areas will be inspected by the Site Engineer prior to filling. Any pits, sumps, basements or depressions in contact with a hazardous waste or PCB shall be decontaminated in accordance with any applicable Federal and/or State rules and/or regulations.

3.16. Back-fill all pits, sumps, and depressions up to existing grade. Each site shall be rough graded and left in a neat, clean, safe condition. Contractor will use fill material approved by the Engineer. The final six inches of fill shall be other select fill material approved by the Engineer.

3.17. Furnish all fill material in accordance with the Specification. If the work activity generates more fill material than needed, the Contractor shall pay for the transportation and disposal off site. If the work activity is fill negative, the Contractor shall pay for the purchase and transportation of required fill to the site. Such purchased material shall be approved by the Site Engineer.

3.18. Furnish portable sanitary facilities and drinking water for Contractor's personnel in areas of removal.

3.19. Furnish electric power and temporary lighting in those areas of removal where active utilities are not available.

3.20. Provide adequate protective barriers for open pits, holes and depressions, as a result of the equipment removal work, until they are properly backfilled. Temporary barricades shall conform to all applicable Federal, State and Local, rules and regulations or standards including, but not limited to OSHA.

3.21. Remove above ground utility support systems such as poles, structural steel towers or guy wires which have been designated to be removed by the Engineer.

3.22. Remove and scrap all tanks, including supporting steel and concrete structures. Prior to removal work Contractor shall remove the contents of each tank, drain each tank and otherwise purge each tank in accordance with all applicable rules or regulations to render them safe for removal. Notify Engineer of any potentially contaminated soils. Remove of these tanks shall conform to all applicable Federal, State, and Local laws, statutes, regulations or ordinances.

3.23. Secure the approval of local Fire Department for the Fire Prevention Plan. Contractor shall meet with representatives of the Fire Department prior to commencement of work on each facility. Prior to the commencement of removal work, Contractor shall inspect all fire hydrants in the work area and shall notify the Engineer of those that are not in good operating condition.

3.24. Provide fire extinguishers and fire hoses as required to immediately control any fires resulting from the work. Implement all fire prevention measures as directed by the Fire Department. Measures required by Fire Department may include, but will not be limited to, the maintenance of pressurized fire hoses at each removal site.

3.25. Attend a safety meeting with AEP Company's representatives prior to starting work in each facility or designed area.

3.26. Furnish all temporary or permanent supports or protective devices which are necessary to preserve active pipes, electrical lines or other structures which AEP Company designates to remain in place.

3.27. Abide by AEP Company Contractor Safety Responsibilities, AEP Company Energy Control-Lockout and Tryout Rules, as well as all Federal, State, and Local regulations.

3.28. Secure the Engineer's approval prior to using any railroad track or mobile crane movements to or from the dismantling site.

3.29. Schedule rail movements, order all railroad cars and be solely responsible for demurrage charges resulting from the Contractor's operations.

3.30. Where Contractor removes railroad track, the Contractor shall remove all wooden and concrete ties, and load and transport them to an approved disposal site approved by the Engineer. Contractor shall be responsible for

the cost of all removal, loading, transportation, and disposal of such material.

3.31. Subsequent to the removal efforts, Brandenburg shall place six (6) inches of topsoil and hydro seed the work area.

3.32. HAZARDOUS WASTE HANDLING AND DISPOSAL

3.32.1. Contractor shall provide all supervision, labor, consumable materials, tools, equipment, documentation, services and permits required to identify, remove and load any hazardous waste located in, adjacent to or forming a part of the equipment designated for removal. Contractor shall be responsible to perform all in-plant handling of such materials, including, but not limited to removal, loading, and in-plant transportation. Hazardous waste removal work shall include, but is not necessarily limited to, the work described herein.

3.32.2. Contractor is required to secure samples of all materials, which are suspected of being a hazardous waste, located in the areas defined in this Specification. Samples shall be collected in accordance with all applicable regulations. Contractor shall deliver all samples of suspected hazardous waste to the Engineer. AEP Company shall secure required analyses of all such samples.

3.32.3. Prepare a complete written hazardous waste removal plan for each work site that will be submitted to the Engineer for his review prior to the start of work in an area.

3.32.4. Contractor shall provide all respirators, protective clothing and equipment required to protect all personnel associated with the handling or removal of any Hazardous Wastes. All said respirators, protective clothing and equipment shall conform to all applicable rules, regulations and standards, including but not limited to OSHA.

3.32.5. Employ only competent persons, trained, knowledgeable and qualified in the techniques of handling and disposal of hazardous wastes and subsequent cleaning of contaminated areas. Employees who perform hazardous waste removal work shall possess current, valid licenses as required by any government agency having jurisdiction over the work. Perform all hazardous waste removal in strict accordance with all applicable Federal, State and Local laws, statutes, ordinances and regulations. Contractor shall provide timely and accurate notification in accordance with all Federal, State and Local laws, statutes, regulations and ordinances.

3.32.6. Contractor shall post all appropriate warning signs at each work area, as is required by applicable regulations.

3.32.7. Maintain complete and accurate records of all removal activities in accordance with all Federal, State, and Local laws, statutes, regulations and ordinances. Contractor shall submit copies of all such records to AEP Company on a weekly basis.

3.32.8. Perform personal monitoring as necessary to assure the safety of all persons associated with the removal of hazardous wastes and as required by Federal, State, and Local laws, statutes, regulations and ordinances. If so required, Contractor shall perform environmental air monitoring in the area of each location where hazardous waste removal work is performed. Environmental air monitoring shall comply with applicable Federal, State, and Local laws, statutes, regulations and ordinances.

3.32.9. AEP Company shall be responsible for disposal, the method of disposal and the disposal site for all identified hazardous waste except asbestos waste. Contractor shall load all such wastes into trucks or containers provided by AEP Company.

3.33. CONSTRUCTION / DEMOLITION WASTE

3.33.1. Contractor is required to perform the work described herein in a manner that will separate construction / demolition waste from ferrous scrap, combustible waste, non-ferrous scrap, ferrous scrap, process demolition waste, oils and greases, hazardous wastes, and all other materials.

3.33.2. Contractor shall identify all quantities of construction / demolition waste to the Engineer. The Engineer shall positively identify all such materials as being construction / demolition waste.

3.33.3. For all materials which have been positively identified by the Engineer as construction / demolition waste, Contractor shall use such materials as clean fill in locations approved for filling by the Engineer.

3.33.4. Contractor shall be responsible to perform all in-plant handling of such materials, including, but not limited to, screening, separation, from other materials, loading, crushing and transportation.

3.33.5. Contractor shall be responsible for any costs that are incurred as a result of his handling construction / demolition waste, including, but not limited to, sampling, analysis, permit applications, loading, on and off-site transportation, and disposal at an approved disposal site.

3.34. OILS

3.34.1. Contractor is required to secure samples of all oils and oily wastes located in the areas defined in this Specification. Samples shall be collected in accordance with all applicable regulations.

3.34.2. AEP Company shall secure analyses required by the applicable regulations, or by the disposal facility, of all such samples, including, but not limited to, analysis for PCB contamination.

3.34.3. For all oils which have been positively identified as being free of PCB contamination (i.e. less than 50 ppm), Contractor shall be responsible to perform all handling of such materials, including, but not limited to, removal, clean up, loading and transportation.

3.34.4. Contractor shall be responsible to pay for fees to dispose of all oils and oily waste in accordance with all applicable regulations. The Engineer shall approve all methods of disposal and disposal sites for all oils and oily waste.

3.35. GREASES

3.35.1. Contractor is required to secure samples of all greases and wastes containing grease located in the areas defined in this Specification. Samples shall be collected in accordance with all applicable regulations.

3.35.2. AEP Company shall secure analyses required by the applicable regulations, or by the disposal facility, of all such samples.

3.35.3. Contractor shall be responsible to perform all handling of such materials, including, but not limited to, removal, clean up, loading, and transportation.

3.35.4. AEP Company shall be responsible for the disposal of all special and hazardous greases and waste containing greases in accordance with all applicable regulations.

3.36. PROCESS MATERIALS

3.36.1. Contractor is required to perform the work described herein in a manner that will separate process demolition debris from ferrous scrap, combustible debris, non-ferrous scrap, construction / demolition waste, oils and greases, hazardous wastes, and all other materials.

3.36.2. Prior to the start of demolition in an area, Contractor shall identify all quantities of process materials to the Engineer. The Engineer shall positively identify all such materials as being process materials.

3.37. PCBs AND EQUIPMENT CONTAINING PCBs

3.37.1. Prior to dismantling, Contractor shall conduct a survey of each dismantling area to locate and identify any electrical or hydraulic equipment which has not been clearly identified as being free of PCB contamination and, therefore, may contain PCBs. Contractor shall provide the Engineer with the location and description of any surveyed equipment which may contain PCBs. Where so directed by AEP Company, Contractor shall provide AEP Company with a sample of the oil contained in the piece of equipment. AEP Company will secure analysis and provide Contractor with the written results.

3.37.2. Prior to dismantling the facility, the Contractor shall remove, intact each piece of PCB contaminated equipment. Contractor shall transport said PCB equipment to AEP Company's designated PCB storage facility. Contractor shall schedule and coordinate said deliveries with the Engineer. Alternatively, at the direction of the Engineer, Contractor shall load PCB equipment onto vehicles provided by AEP Company. Contractor shall schedule and coordinate said loading with the Engineer. Contractor shall schedule and coordinate the pumping and removal of PCB dielectric fluid from transformers prior to loading when so directed by the Engineer.

3.37.3. AEP Company shall be responsible for the disposal of all PCB equipment and fluids.

3.38. PIPING SYSTEMS

3.38.1. Prior to the commencement of dismantling work, Contractor shall identify, plan and perform all piping shut offs, disconnections, and relocation work necessary to complete the work specified in a safe, orderly manner.

3.38.2. Piping shall be purged (where necessary) and shall be removed to a point of origin as designated by the Engineer.

3.38.3. Contractor shall submit plans, procedures and working drawings showing design details for all piping work to the Engineer for review. Contractor shall secure the Engineer's review of all designs, plans and procedures prior to the commencement of work. The correctness of the design shall remain the Contractors responsibility.

3.38.4. Contractor shall provide all supervision, labor, materials, tools and equipment necessary to complete all piping work required for the work as specified herein. Contractor shall be responsible for the identification of all piping construction, disconnection and relocation work, which will be required to complete all work specified herein.

3.38.5. Contractor shall perform all piping construction, disconnection and relocation work using methods which will not interrupt AEP Company's ongoing operations.

3.38.6. Secure the Engineer's permission prior to any utility outage. In the absence of the Engineer's approval of Contractor's proposed outage, Contractor shall perform the proposed work on live pressurized lines.

3.39. ELECTRICAL SYSTEMS

3.39.1. Prior to the commencement of dismantling work, Contractor shall identify, plan and perform all electrical shut offs, disconnections, and relocation work necessary to complete the work specified in a safe and orderly manner.

3.39.2. Conduit, cable, wireways, and buss shall be removed to a point of origin as designated by the Engineer.

3.39.3. Contractor shall submit plans, procedures and working drawings showing design details for all electrical and related work to the Engineer for review. Contractor shall secure the Engineer's review of all designs prior to the commencement of work. The correctness of design shall remain the

Contractor's responsibility.

3.39.4. Contractor shall provide all supervision, labor, materials, tools and equipment necessary to complete all electrical, telecommunication and telemetering work required for the dismantling work specified herein. Contractor shall be responsible for the identification of all electrical, telecommunication and telemetering construction, disconnection and relocation work which will be required to complete all work specified herein.

3.39.5. Contractor shall perform all electrical construction, disconnection and relocation work using methods which will not interrupt AEP Company's ongoing operations.

3.39.6. Contractor shall secure the Engineer's permission prior to any utility outage. In the absence of the Engineer's approval of Contractor's proposed outage, Contractor shall perform the proposed work on live energized lines.

4. WORK BY PURCHASER:

AEP Company Shall:

4.1. Provide Safety Data Sheets (SDS) in accordance with OSHA "Right to Know" regulations for each substance listed under said regulations.

4.2. Provide, where available, utility services such as 460 Volt, 3 phase, 60 Hz power, 250 Volt DC current, potable water, oxygen, compressed air, or natural gas, which are deemed available by AEP Company. Contractor may, at his own expense and approval of the Engineer, make necessary connections provided there is no interruption to normal production operations. AEP Company assumes no responsibility or liability for loss of, or damage to, the equipment or materials of the Contractor or his subcontractors. Contractor will pay charges that may be assessed. The assessment of charges and/or the availability of utilities may change through the course of the contract as determined.

4.3. Provide existing railroad tracks, railroad tracks sidings, and roadways on plant site, if available, for Contractor's use when and where the Engineer may designate. Contractor shall keep traffic lanes free of congestion so as to avoid interference with normal plant operations.

4.4. Provide one copy of all available drawings necessary for the completion of the work specified. These drawings are to be used by the Contractor for reference only in the performance of the work. Said drawings are not to be construed as a complete description of the Scope of Work, nor as fully depicting existing conditions. Additional copies may be purchased by Contractor through the Purchaser.

4.5. Approve the selection of all subcontractors before they will be allowed to enter the job site and perform work. Subcontractors are subject to all applicable terms and conditions contained herein.

4.6. Provide written releases for the demolition of each specific area or facility as identified in the Schedule of Values. Demolition shall not commence without the receipt of said release.

4.7. Assign to Contractor ownership of each facility to be dismantled. The assignment shall include:

4.7.1. All ferrous and non-ferrous scrap resulting from the dismantling work

4.7.2. All ferrous and non-ferrous scrap located within each dismantling area as identified by Engineer during the site visitation.

4.7.3. Spare parts and/or spare equipment.

4.7.4. All railroad track designated for removal.

4.7.5. All vehicles and mobile equipment located within each dismantling area as identified in the Specification.

4.8. AEP Company will maintain ownership of all real estate

5. Asbestos

5.1. This conceptual estimate does not include the cost for the removal or disposal of asbestos containing materials.

6. Landfill

6.1. This conceptual cost estimate does not include the cost for the closure or capping of any landfill(s), if present.

7. Clearwater Pond

7.1. This conceptual estimate includes backfilling the Clearwater pond on the south side of the west wastewater pond from EL. 375' up to surrounding grade elevation with berm material currently surrounding there existing pond as well as crushed concrete material from the demolition efforts.

8. Ash Pond / Fly Ash Pond

8.1. This conceptual cost estimate does not include the cost for any water filtering, discharge, or capping of any pond(s), if present.

9. Resale Equipment Value

9.1. Brandenburg does not believe that any equipment holds a resale value greater than the anticipated scrap value of said equipment; therefore, no resale of equipment has been included.

10. Pricing

Description	Cost
General Conditions	$184,500.00
Environmental	$450,000.00
Unit 1 and 2 Demolition	$7,090,775.00
Stack	$475,000.00
Cooling Towers	$1,200,000.00
River Cells	$5,300,000.00
Flowable Fill	$990,000.00
Clearwater Pond	$717,000.00
Total	$16,407,275.00

Total Cost = $38,717,775.00

Scrap Revenue = ($22,310,500.00)

Volumes

Demolition Material	**Volume**
Concrete	66,200 yards
Demolition Debris	16,342 yards
Scrap Ferrous Steel	132,374 tons
Scrap Non-ferrous Steel	1,836,829 lbs
Oils/Greases	15,000 gallons
Clearwater Pond Backfill	81,700 yards

Berrien Springs Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

AEP AMERICAN® ELECTRIC POWER

Berrien Springs Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	01/28/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D.F. Franczak	T. J. Meehan	All

Berrien Springs Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

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1.0 INTRODUCTION

The Berrien Springs Hydroelectric Plant located in the City of Berrien Springs, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of two (2) earthen dams separated by a concrete spillway, rollway section and powerhouse. The powerhouse and adjacent penstock sections are located between the left embankment and the rollway sections. Each of the two (2) open flume penstock sections feed six (6) Flygt generating units which were installed in 1995 with a total capacity rating of 7,200 kW. The two (2) original generating units located in the powerhouse were abandoned in place and the other two (2) of the four (4) units were removed. Trash racks and a log boom are located upstream of the penstock sections. The control room for the hydroelectric components is located in the powerhouse.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Berrien Springs Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33705B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$9,416,995
Scrap Value	($226,765)
Direct Cost Subtotal	$9,190,231
Indirect Cost	$942,000
Contingency Cost	$2,106,000
Escalation Cost	$0
Total Project Cost	$12,238,230

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$177,529
Scrap Value	($113,105)
Direct Cost Subtotal	$64,424
Indirect Cost	$6,000
Contingency Cost	$53,600
Escalation Cost	$0
Total Project Cost	$124,024

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$6,189,535
Scrap Value	($186,641)
Direct Cost Subtotal	$6,002,895
Indirect Cost	$615,000
Contingency Cost	$1,389,400
Escalation Cost	$0
Total Project Cost	$8,007,295

Asbestos Removal Conceptual Cost Estimate No. 33737B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $5,100. Quantities were derived from drawings and past experience. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The existing fish ladder will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Wednesday December 16, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Berrien Springs Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of the spillway gates after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Berrien Springs Plant Drawings: One-Line Diagrams, No. 12-12001-2, 10/30/07 and No. W-1000, Revision 17.

5.2 Spaulding Consultants, LLC, Supporting Technical Information Document, Berrien Springs Hydroelectric Project, November, 2007.

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EXHIBIT 1
Berrien Springs Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Berrien Springs Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33705B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 177,529	$ 6,189,535	$ 9,416,995
Scrap Value	$ (113,105)	$ (186,641)	$ (226,765)
Direct Cost Subtotal	$ 64,424	$ 6,002,895	$ 9,190,231
Indirect Cost	$ 6,000	$ 615,000	$ 942,000
Contingency Cost	$ 53,600	$ 1,389,400	$ 2,106,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 124,024	$ 8,007,295	$ 12,238,230

EXHIBIT 2
Berrien Springs Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33705B

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BERRIEN SPRINGS
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33705B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33705B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(113,105)	27,930	1,746	149,599	64,424
ACCOUNT B	DEMOLITION ACCOUNT B	782,260	(73,536)	2,644,808	33,942	2,584,938	5,938,471
ACCOUNT C	DEMOLITION ACCOUNT C	1,456,400	(40,124)	2,863	19,762	1,768,197	3,187,336
	TOTAL DIRECT	2,238,660	(226,765)	2,675,601	55,450	4,502,734	9,190,231

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	4,502,734		55,450
Material	2,675,601		
Subcontract	2,238,660		
Scrap Value	(226,765)		
	9,190,230	**9,190,230**	
Other Direct & Construction Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		9,190,230	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	942,000		
93-8 EPC Fee			
	942,000	**10,132,230**	
Contingency:			
94-1 Contingency on Material	535,000		
94-2 Contingency on Labor	901,000		
94-3 Contingency on Sub.	448,000		
94-6 Contingency on Scrap	34,000		
94-5 Contingency on Indirect	188,000		
	2,106,000	**12,238,230**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		12,238,230	
Total		***12,238,230***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .6 MW FLYGT GENERATOR	12 GENERATORS AT 9500# EA	57.00 TN	564	85.53 /MH	48,269		-		48,269
			DEMO FLYGT TURBINE AND GEARS	12 GENERATORS AT 14000# EA	84.00 TN	832	85.53 /MH	71,134		-		71,134
			DEMO HOIZONTAL CAMELBACK GENERATOR	2 GENERATORS AT 14000# EA	14.00 TN	139	85.53 /MH	11,856		-		11,856
			TURBINE ROOM 5 TON GANTRY CRANE		5.00 TN	50	121.33 /MH	6,006		-		6,006
			MECHANICAL EQUIPMENT			1,584		137,265				137,265
			WHOLE PLANT DEMOLITION			1,584		137,265				137,265
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	.6 MW FLYGT GENERATOR, 12 @5,225# EA	-31.00 TN		79.62 /MH		-	-	(3,660)	(3,660)
			MIXED STEEL	DEMO FLYGT TURBINE AND GEARS	-84.00 TN		79.62 /MH		-	-	(9,919)	(9,919)
			MIXED STEEL	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 4.2 TN EA	-8.40 TN		79.62 /MH		-	-	(992)	(992)
			MIXED STEEL	TURBINE ROOM 5 TON GANTRY CRANE	-5.00 TN		79.62 /MH		-	-	(590)	(590)
			MIXED STEEL								(15,161)	(15,161)
		18.30.00	COPPER									
			COPPER	12 - .6 MW FLYGT GENERATOR 12@ 4,275 LB EA	-25.60 TN		79.62 /MH		-	-	(81,408)	(81,408)
			COPPER	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 2.6 TN EA	-5.20 TN		79.62 /MH		-	-	(16,536)	(16,536)
			COPPER								(97,944)	(97,944)
			SCRAP VALUE								(113,105)	(113,105)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	294.00 CY	162	76.27 /MH	12,334	27,930	-	-	40,264
			Concrete			162		12,334	27,930			40,264
			CONCRETE			162		12,334	27,930			40,264
			ACCOUNT A DEMOLITION ACCOUNT A			1,746		149,599	27,930		(113,105)	64,424
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - TOP PORTION: WEIR, ENDWALL, GATE WALLS & HEAD WALL	2,197.00 CY	2,719	89.94 /MH	244,552		-	-	244,552
			EQUIPMENT/ BUILDING FOUNDATION	GRAVITY DAM - TOP PORTION OF DAM	697.00 CY	863	89.94 /MH	77,584		-	-	77,584
			CONCRETE			3,582		322,137				322,137
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	TAINTER GATES STRUCTURE AND WALKWAY	44.90 TN	50	79.62 /MH	3,996		-	-	3,996
			STRUCTURAL AND GIRT STEEL	GRAVITY DAM TOP PORTION OF DAM: STREEL AND WALKWAY	35.50 TN	40	79.62 /MH	3,159		-	-	3,159
			STEEL			90		7,155				7,155
		10.31.00	MECHANICAL EQUIPMENT									
			80 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			TAINTER GATES	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109
			STOP LOGS	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109
			MECHANICAL EQUIPMENT			182		22,029				22,029
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 6800/9068 KVA (STEEL)	10.00 TN	29	80.14 /MH	2,356		-	-	2,356
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 6800/9068 KVA (CU)	5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			ELECTRICAL EQUIPMENT			59		4,711				4,711
		10.86.00	WASTE									
			WASTE	MISC	1.00 LS	0	121.33 /MH	13		-	10,000	10,013
			WASTE			0		13			10,000	10,013

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			WHOLE PLANT DEMOLITION			3,912		356,045			10,000	366,045
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	80 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	BAR RACKS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	TAINTER GATES AND WALKWAY	-44.90 TN		79.62 /MH		-	-	(5,302)	(5,302)
			MIXED STEEL	STOP LOGS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	GRAVITY DAM TOP PORTION OF DAM: STREEL AND WALKWAY	-35.50 TN		79.62 /MH		-	-	(4,192)	(4,192)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-10.00 TN		79.62 /MH		-	-	(1,181)	(1,181)
			MIXED STEEL								(16,756)	(16,756)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-5.00 TN		79.62 /MH		-	-	(15,900)	(15,900)
			COPPER								(66,780)	(66,780)
			SCRAP VALUE								(83,536)	(83,536)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVER BED EXCAVATION FOR RIPRAP	100.00 CY	17	88.08 /MH	1,453		-	-	1,453
			Earthwork, Excavation			17		1,453				1,453
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	STREAMBED PROTECTION 47770 CY - 5689 CY ASSUMING REUSE OF CAUSEWAY STONE	42,081.00 CY	18,564	74.10 /MH	1,375,577	1,721,113	-	-	3,096,689
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS INSTALLATION	5,689.00 CY	2,510	74.10 /MH	185,966	232,680	-	-	418,647
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	REUSE CAUSEWAY RIP RAP FOR BANK PROTECTION	5,689.00 CY	2,510	74.10 /MH	185,966		-	-	185,966
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT SPILLWAY FLOOR	100.00 CY	44	74.10 /MH	3,269	4,090	-	-	7,359
			Erosion and Sedimentation Control			23,627		1,750,778	1,957,883			3,708,661
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		450.00 AC	6,386	74.64 /MH	476,661	686,925	-	-	1,163,586
			LANDSCAPING			6,386		476,661	686,925			1,163,586
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	3,556.00 CY		196.64 /MH			142,240	-	142,240
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 7111+3556	10,667.00 CY		196.64 /MH			640,020	-	640,020
			Soil Remediation							782,260		782,260
			CIVIL WORK			30,030		2,228,893	2,644,808	782,260		5,655,961
			ACCOUNT B DEMOLITION ACCOUNT B			**33,942**		**2,584,938**	**2,644,808**	**782,260**	**(73,536)**	**5,938,471**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - BOTTOM PORTION : APRON AND THROAT	4,869.00 CY	6,026	89.94 /MH	541,978		-	-	541,978
			EQUIPMENT/ BUILDING FOUNDATION	GRAVITY DAM - BOTTOM PORTION: APRON AND BASE	838.00 CY	1,037	89.94 /MH	93,279		-	-	93,279
			EQUIPMENT/ BUILDING FOUNDATION	EAST AND WEST PENSTOCKS - TOP PORTION	638.00 CY	790	89.94 /MH	71,017		-	-	71,017
			EQUIPMENT/ BUILDING FOUNDATION	EAST AND WEST PENSTOCKS - BOTTOM PORTION: APRON AND BASE	4,284.00 CY	5,302	89.94 /MH	476,860		-	-	476,860
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE - TOP PORTION : WALLS	1,106.00 CY	1,369	89.94 /MH	123,111		-	-	123,111
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE - BOTTOM PORTION : BASEMENT FLOOR	1,546.00 CY	1,913	89.94 /MH	172,088		-	-	172,088
			CONCRETE			16,437		1,478,333				1,478,333
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	EAST AND WEST PENSTOCKS - TOP PORTION, STEEL DECK AND BAR RACK	128.00 TN	143	79.62 /MH	11,391		-	-	11,391

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	221.00 TN	247	79.62 /MH	19,667		-	-	19,667
			STEEL			390		31,058				31,058
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	68'x93'x70' TALL	442,680.00 CF	1,899	89.81 /MH	170,575		-	-	170,575
			ARCHITECTURAL			1,899		170,575				170,575
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO FLYGT PENSTOCKS	12 GENERATORS AT 11,800# EA	70.80 TN	701	85.53 /MH	59,956		-		59,956
			DEMO CAMELBACK PENSTOCKS	2 GENERATORS AT 15 TN EA	30.00 TN	297	85.53 /MH	25,405		-		25,405
			MECHANICAL EQUIPMENT			998		85,361				85,361
			WHOLE PLANT DEMOLITION			19,724		1,765,327				1,765,327
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO FLYGT PENSTOCKS	-70.80 TN		79.62 /MH		-	-	(8,360)	(8,360)
			MIXED STEEL	DEMO CAMELBACK PENSTOCKS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	EAST AND WEST PENSTOCKS - TOP PORTION, STEEL DECK AND BAR RACK	-128.00 TN		79.62 /MH		-	-	(15,114)	(15,114)
			MIXED STEEL	GENERATOR HOUSE	-111.00 TN		79.62 /MH		-	-	(13,107)	(13,107)
			MIXED STEEL								(40,124)	(40,124)
			SCRAP VALUE								(40,124)	(40,124)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVER BED EXCAVATION FOR RIPRAP (140-100)	40.00 CY	7	88.08 /MH	581		-	-	581
			Earthwork, Excavation			7		581				581
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT RETAINING WALLS (170-100)	70.00 CY	31	74.10 /MH	2,288	2,863	-	-	5,151
			Erosion and Sedimentation Control			31		2,288	2,863			5,151
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	6,620.00 CY		196.64 /MH			264,800	-	264,800
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 7111+3556	19,860.00 CY		196.64 /MH			1,191,600	-	1,191,600
			Soil Remediation							1,456,400		1,456,400
			CIVIL WORK			37		2,870	2,863	1,456,400		1,462,133
			ACCOUNT C DEMOLITION ACCOUNT C			**19,762**		**1,768,197**	**2,863**	**1,456,400**	**(40,124)**	**3,187,336**

EXHIBIT 3
Berrien Springs Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33737B

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BERRIEN SPRINGS
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33737B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33737B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	3,800					3,800
	TOTAL DIRECT	3,800					3,800

Estimate No.: 33737B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Estimate Totals

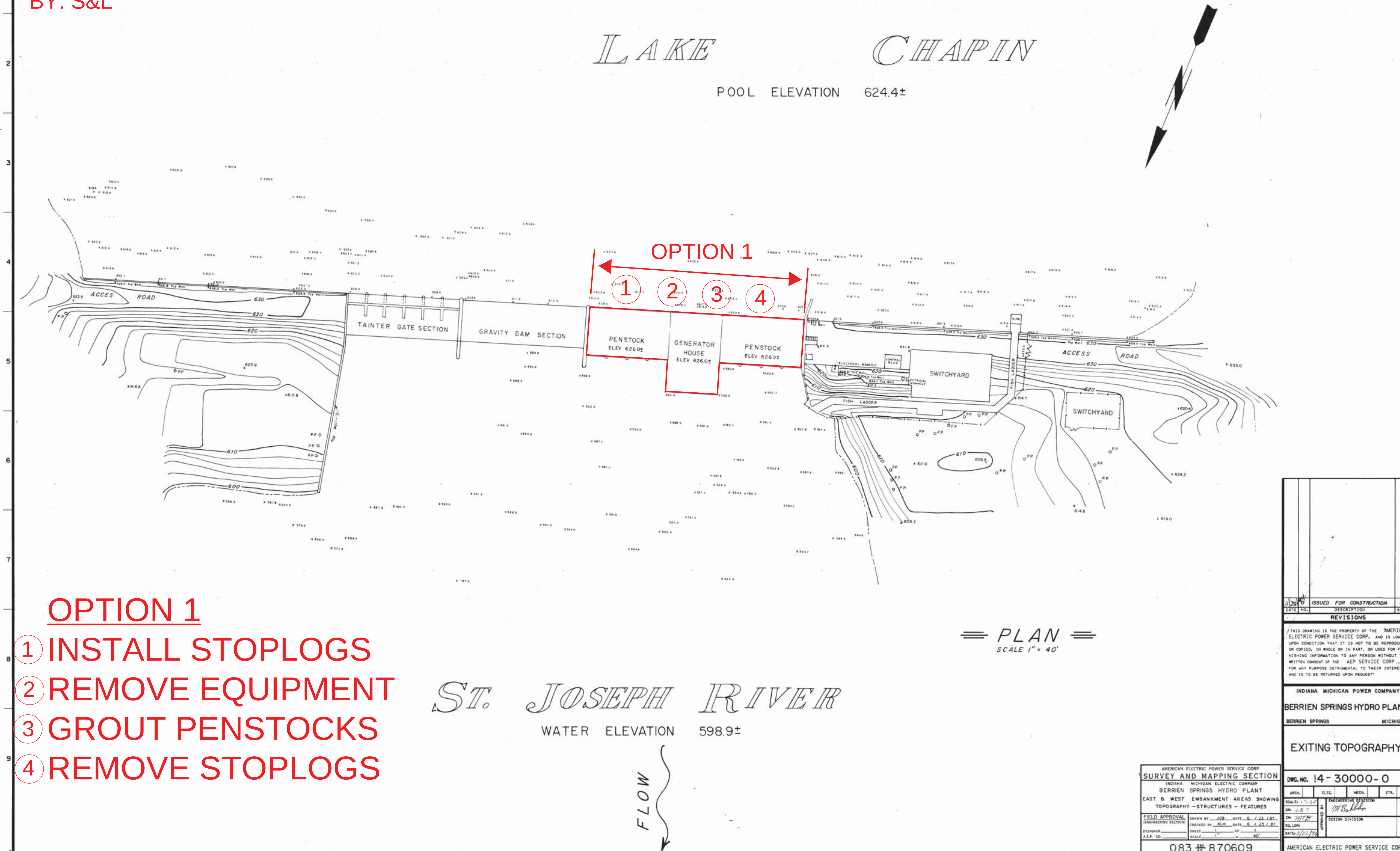
Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	3,800		
Scrap Value			
	3,800	**3,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		3,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	400		
93-8 EPC Fee			
	400	**4,200**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	800		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	100		
	900	**5,100**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		5,100	
Total		***5,100***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			**ASBESTOS REMOVAL**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.37.00	**ASBESTOS REMOVAL**									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL							**3,800**		**3,800**
			WHOLE PLANT DEMOLITION							**3,800**		**3,800**
			ASBESTOS ASBESTOS REMOVAL							**3,800**		**3,800**

EXHIBIT 4
Berrien Springs Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

BERRIEN SPRINGS HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 1 OF 7



OPTION 1

1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. GROUT PENSTOCKS
4. REMOVE STOPLOGS

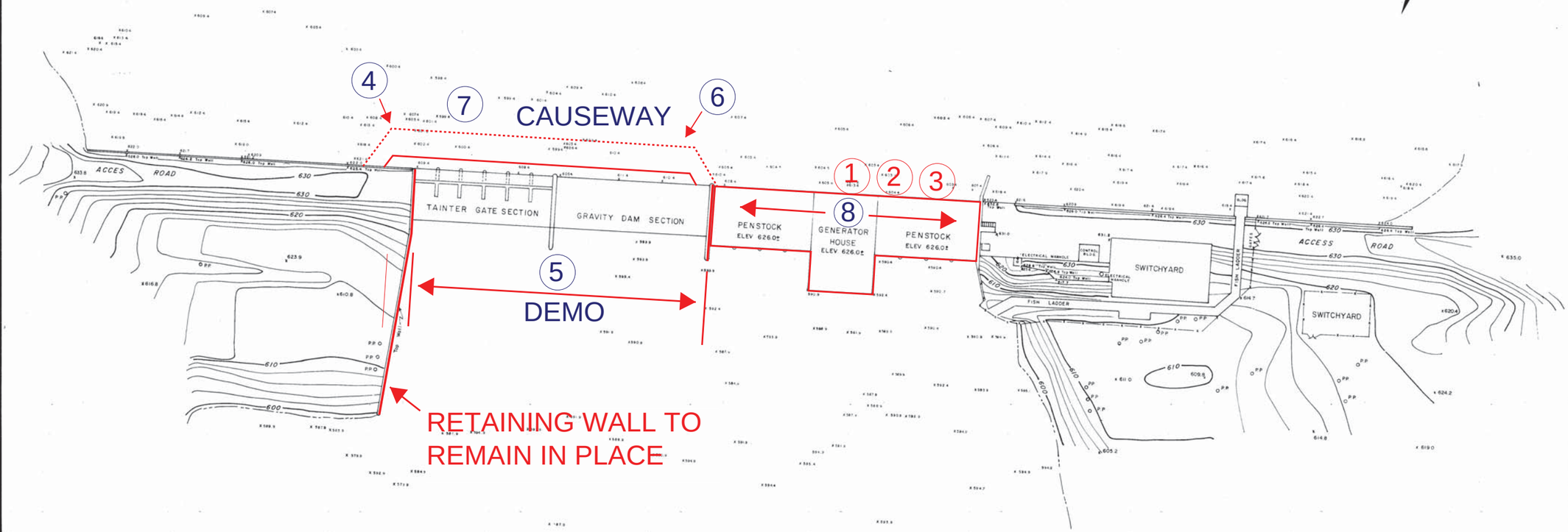
DWG. NO. 14-30000

BERRIEN SPRINGS HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 2 OF 7

PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO TAINTER GATES & SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION
⑦ REMOVE CAUSEWAY
⑧ GROUT PENSTOCKS



PLAN
SCALE 1" = 40'

OPTION 2

ST. JOSEPH RIVER
WATER ELEVATION 598.9±
FLOW

DATE	NO.	DESCRIPTION	APPD.
4/29/16	0	ISSUED FOR CONSTRUCTION	MB

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY → STRUCTURES - FEATURES
FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JDB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'
083 130/40 870609

ENGINEERING DIVISION
DESIGN DIVISION
APPROVED BY
SCALE: 1" = 40'
DR: JDB
CH: MTB
SG. LDR:
DATE: 2/22/16

AMERICAN ELECTRIC POWER SERVICE CORP.

6788

DWG. NO. 14-30000

BERRIEN SPRINGS HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 3 OF 7

PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO TAINTER GATES & SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑦ REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO GENERATION BUILDINGS
⑩ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑪ REMOVE CAUSEWAY

LAKE CHAPIN
POOL ELEVATION 624.4±

RETAINING WALL TO REMAIN IN PLACE

ABUTMENT TO REMAIN IN PLACE

RETAINING WALL TO REMAIN IN PLACE

ABUTMENT TO REMAIN IN PLACE

DEMO

DEMO

TAINTER GATE SECTION

GRAVITY DAM SECTION

PENSTOCK ELEV 626.0±

GENERATOR HOUSE ELEV 626.0±

PENSTOCK ELEV 626.0±

SWITCHYARD

SWITCHYARD

FISH LADDER

ACCESS ROAD

ACCESS ROAD

PLAN
SCALE 1" = 40'

OPTION 3

ST. JOSEPH RIVER
WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
8/29/90	3	ISSUED FOR CONSTRUCTION	MP

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY - STRUCTURES - FEATURES
FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JCB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'
083 330/40 870609

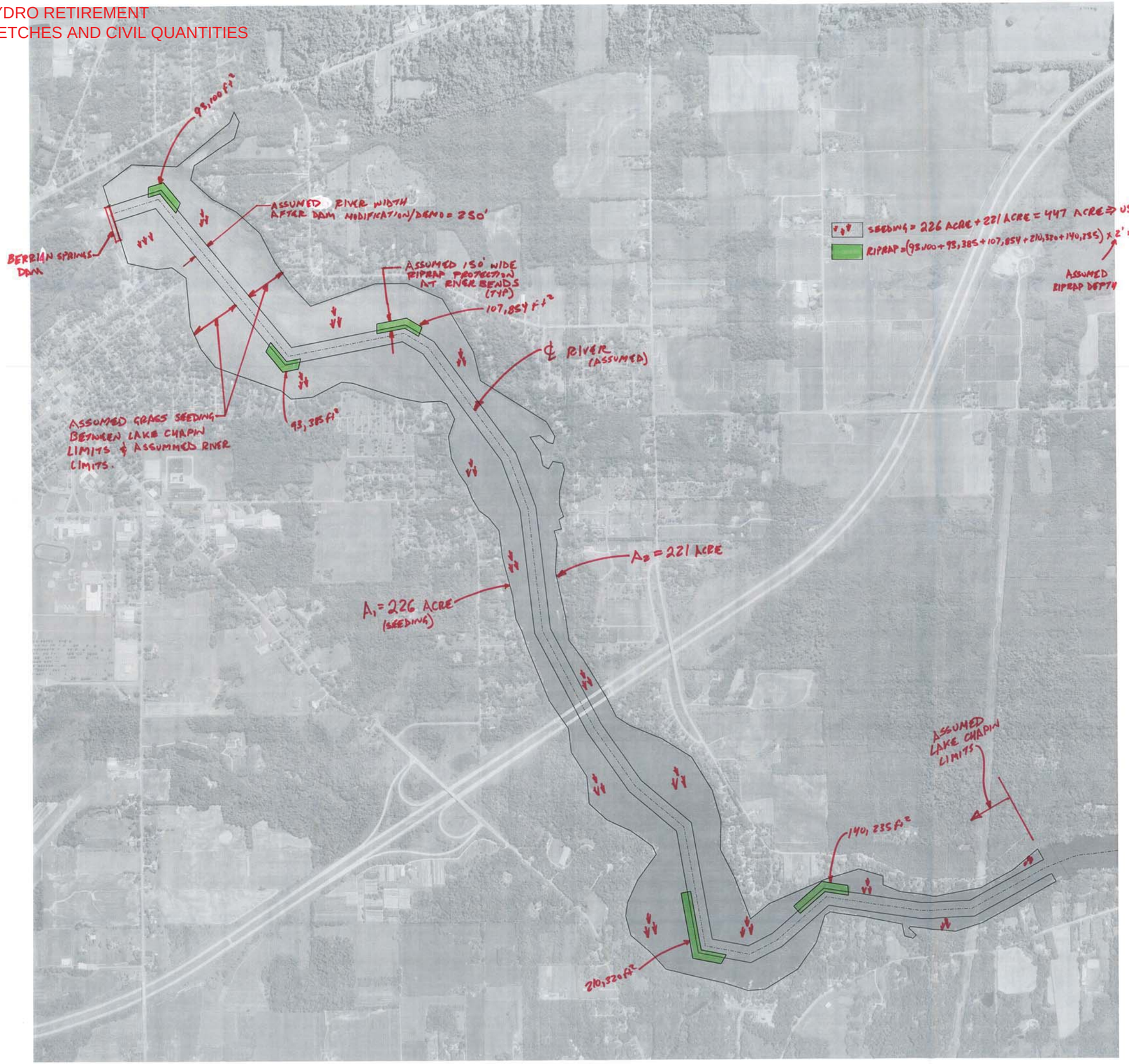
ARCH. | ELEC. | MECH. | STR.
SCALE 1"=40'
DR. J.B.T.
CH. MTB
SQ. LDR
DATED 7/22/90
APPROVED BY: ENGINEERING SUPERVISOR MTB / DESIGN DIVISION

AMERICAN ELECTRIC POWER SERVICE CORP.

678B

BERRIAN SPRINGS			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	450	ACRE	
RIPRAP PROTECTION	47,770	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	100	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	100	CY	2 ft riprap protection @ D(50)=12"

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	450	ACRE	
RIPRAP PROTECTION	47,770	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	140	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT RETAINING WALLS	170	CY	2 ft riprap protection @ D(50)=12"

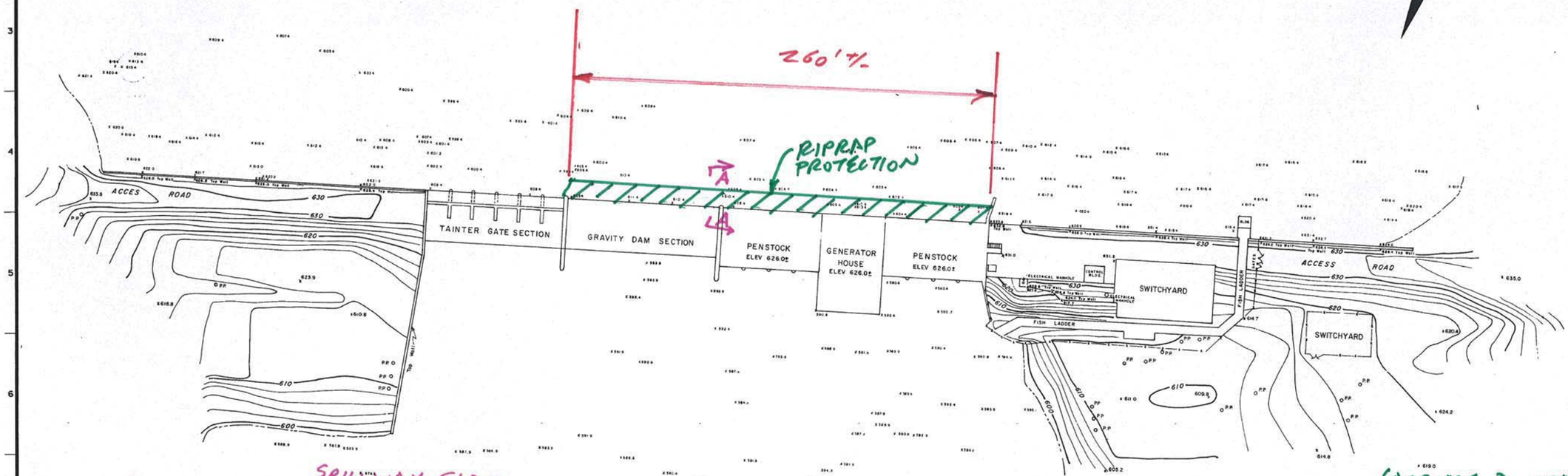


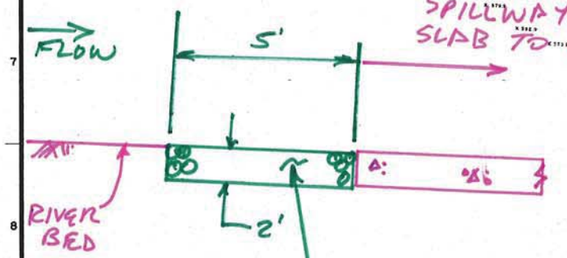
BERRIAN SPRINGS
QUANTITIES
JAN/19/2016
BY: S&L

I&M CONCEPTUAL DEMO ESTIMATE
BERRIAN SPRINGS RETIREMENT OPTION 2
CIVIL QUANTITIES

LAKE CHAPIN

POOL ELEVATION 624.4±





SECTION A
N.T.S.

$V_{RIPRAP} = (5' \times 2') \times 260' \times \frac{1}{27} = 96\ CY \approx 100\ CY$

$V_{EXC} = V_{RIPRAP} = 100\ CY$

(ASSUME $D_{50} = 12"$)

V CUT TO BE REPLACED BY RIPRAP

PLAN
SCALE 1" = 40'

ST. JOSEPH RIVER

WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
6/29/78		ISSUED FOR CONSTRUCTION	MB

REVISIONS

INDIANA MICHIGAN POWER COMPANY

BERRIEN SPRINGS HYDRO PLANT

BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY → STRUCTURES – FEATURES

FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.

DRAWN BY JDB DATE 8/23/77
CHECKED BY PLH DATE 8/25/77
SHEET 1 OF 1
SCALE 1" = 40'

083 330/40 870609

ENGINEERING DIVISION
DESIGN DIVISION
APPROVED BY

AMERICAN ELECTRIC POWER SERVICE CORP.

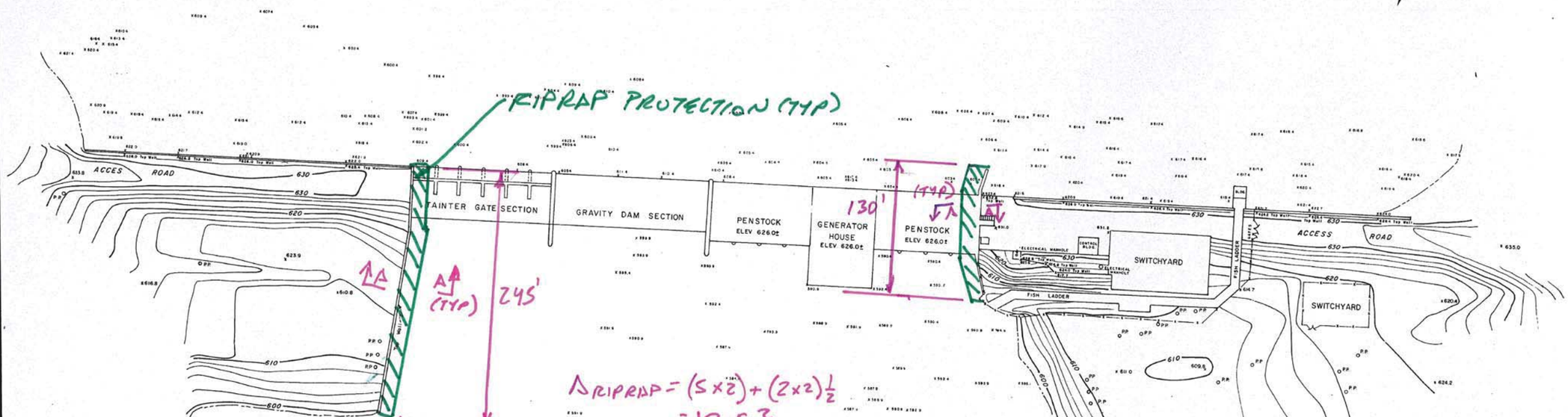
6788

DWG. NO. 14-30000

I&M CONCEPTUAL DEMO ESTIMATE
BERRIAN SPRINGS RETIREMENT OPTION 3
CIVIL QUANTITIES

LAKE CHAPIN

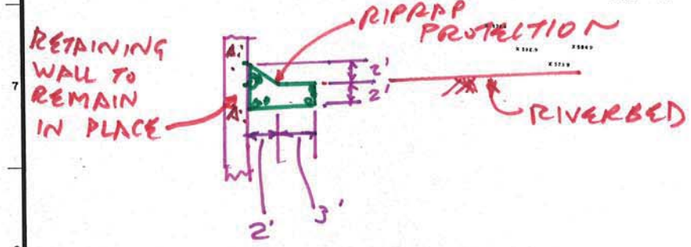
POOL ELEVATION 624.4±



$A_{RIPRAP} = (5 \times 2) + (2 \times 2)\frac{1}{2}$
$= 12\ ft^2$

$V_{RIPRAP} = (12) \times (245+130)\left(\frac{1}{27}\right) = 170\ CY$

$V_{EXC} = (5 \times 2) \times (245+130)\left(\frac{1}{27}\right) = 140\ CY$



SECTION A
N.T.S.

PLAN
SCALE 1" = 40'

ST. JOSEPH RIVER
WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
8/29/80		ISSUED FOR CONSTRUCTION	MD

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

ARCH. | ELEC. | MECH. | STR.

SCALE 1"=40'
DR. J.B.T.
CH. MTP
SU. LDH
DATE 2/22/14
APPROVED BY: M.T. Pellow
ENGINEERING DIVISION
DESIGN DIVISION

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY – STRUCTURES – FEATURES

FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JOB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'

083 870609

AMERICAN ELECTRIC POWER SERVICE CORP.

AEP-G 6788

Buchanan Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	01/29/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D.F. Franczak	T. J. Meehan	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Buchanan Hydroelectric Plant located in the City of Buchanan, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from left to right referenced facing downstream) a short left embankment section, a south abutment training wall, the spillway, the left headrace embankment (which includes the fish ladder), the powerhouse and the terminal headrace abutment. An access bridge spans the upstream end of the headrace and is not considered a water retaining structure. The powerhouse is located downstream of the spillway, at the downstream end of the headrace, and returns flow to the river in a cross channel direction. The powerhouse contains ten (10) operating Leffel Type Z and S turbine generators rated at 0.4 to 0.5 MW each, installed in 1996.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Buchanan Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33706B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$6,045,099
Scrap Value	($161,882)
Direct Cost Subtotal	$5,883,217
Indirect Cost	$599,000
Contingency Cost	$1,343,000
Escalation Cost	$0
Total Project Cost	$7,825,217

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$149,377
Scrap Value	($80,344)
Direct Cost Subtotal	$69,033
Indirect Cost	$7,000
Contingency Cost	$42,600
Escalation Cost	$0
Total Project Cost	$118,633

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$4,143,050
Scrap Value	($81,466)
Direct Cost Subtotal	$4,061,584
Indirect Cost	$414,000
Contingency Cost	$918,600
Escalation Cost	$0
Total Project Cost	$5,394,184

Asbestos Removal Conceptual Cost Estimate No. 33738B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $55,200. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The existing fish ladder and access bridge will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Wednesday December 16, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Buchanan Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of the sluice and crest gates after demolition is completed for retirement option 1. There are two (2) sluice gates on the dam and three (3) hydraulically operated crest gates used to regulate the reservoir elevation.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are twenty (20) control boards mounted on 3' x 9' transite (asbestos) panels and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Buchanan Plant Drawings: One-Line Diagrams, No. 1-12001-0 and No. E-1000, Revision 8.

5.2 Findlay Engineering, Inc., Supporting Technical Information Document, Buchanan Hydroelectric Project, August, 2005.

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EXHIBIT 1
Buchanan Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Buchanan Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33706B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 149,377	$ 4,143,050	$ 6,045,099
Scrap Value	$ (80,344)	$ (81,466)	$ (161,882)
Direct Cost Subtotal	$ 69,033	$ 4,061,584	$ 5,883,217
Indirect Cost	$ 7,000	$ 414,000	$ 599,000
Contingency Cost	$ 42,600	$ 918,600	$ 1,343,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 118,633	$ 5,394,184	$ 7,825,217

EXHIBIT 2
Buchanan Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33706B

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BUCHANAN
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33706B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33706B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(80,344)	27,930	1,404	121,447	69,033
ACCOUNT B	DEMOLITION ACCOUNT B	865,700	(1,122)	1,830,118	17,340	1,297,855	3,992,551
ACCOUNT C	DEMOLITION ACCOUNT C	489,000	(80,416)	(2,945)	15,823	1,415,994	1,821,633
	TOTAL DIRECT	1,354,700	(161,882)	1,855,103	34,568	2,835,296	5,883,218

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	2,835,296		34,568
Material	1,855,103		
Subcontract	1,354,700		
Scrap Value	(161,882)		
	5,883,217	**5,883,217**	
Other Direct & Construction Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		5,883,217	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	599,000		
93-8 EPC Fee			
	599,000	**6,482,217**	
Contingency:			
94-1 Contingency on Material	371,000		
94-2 Contingency on Labor	557,000		
94-3 Contingency on Sub.	271,000		
94-6 Contingency on Scrap	24,000		
94-5 Contingency on Indirect	120,000		
	1,343,000	**7,825,217**	
Escalation:			
96-1 Escalation on Const Equip			
96-2 Escalation on Engr Equip			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Process Eq			
96-5 Escalation on Indirects			
		7,825,217	
		7,825,217	
Total		***7,825,217***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .6 MW GENERATOR	10 GENERATORS AT 9500# EA	47.50 TN	470	85.53 /MH	40,225		-		40,225
			DEMO TURBINE AND GEARS	10 GENERATORS AT 14000# EA	70.00 TN	693	85.53 /MH	59,278		-		59,278
			TURBINE ROOM 8.8 TON OVERHEAD CRANE		8.00 TN	79	121.33 /MH	9,610		-		9,610
			MECHANICAL EQUIPMENT			1,243		109,113				109,113
			WHOLE PLANT DEMOLITION			1,243		109,113				109,113
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	10 - .4 & .5 MW GENERATOR, 10 @5,225# EA	-26.10 TN		79.62 /MH		-	-	(3,082)	(3,082)
			MIXED STEEL	DEMO TURBINE AND GEARS	-70.00 TN		79.62 /MH		-	-	(8,266)	(8,266)
			MIXED STEEL	TURBINE ROOM 8.8 TON OVERHEAD CRANE	-8.00 TN		79.62 /MH		-	-	(945)	(945)
			MIXED STEEL								(12,292)	(12,292)
		18.30.00	COPPER									
			COPPER	10 .4 &.5 MW GENERATOR 10@ 4,275 LB EA	-21.40 TN		79.62 /MH		-	-	(68,052)	(68,052)
			COPPER								(68,052)	(68,052)
			SCRAP VALUE								(80,344)	(80,344)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	294.00 CY	162	76.27 /MH	12,334	27,930	-	-	40,264
			Concrete			162		12,334	27,930			40,264
			CONCRETE			162		12,334	27,930			40,264
			ACCOUNT A DEMOLITION ACCOUNT A			1,404		121,447	27,930		(80,344)	69,033
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SLUICE GATE CREST 16'X6'X7.7'	27.00 CY	33	89.94 /MH	3,005		-	-	3,005
			EQUIPMENT/ BUILDING FOUNDATION	RIGHT GATE CREST 137.85X6'X7.7'	236.00 CY	292	89.94 /MH	26,270		-	-	26,270
			EQUIPMENT/ BUILDING FOUNDATION	CENTER GATE APRON 127.9X6X3.5	99.00 CY	123	89.94 /MH	11,020		-	-	11,020
			EQUIPMENT/ BUILDING FOUNDATION	LEFT GATE CREST 92.44X6'X7.7	158.00 CY	196	89.94 /MH	17,587		-	-	17,587
			CONCRETE			644		57,882				57,882
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	HEADRACE BRIDGE - LEFT IN PLACE	0.00 TN		79.62 /MH			-	-	
		10.31.00	MECHANICAL EQUIPMENT									
			80 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			SLUICE GATES	2 AT 4 TONS EACH	8.00 TN	18	121.33 /MH	2,162		-		2,162
			MECHANICAL EQUIPMENT			21		2,568				2,568
			WHOLE PLANT DEMOLITION			665		60,450				60,450
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	80 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	SLUICE GATES	-8.00 TN		79.62 /MH		-	-	(945)	(945)
			MIXED STEEL								(1,122)	(1,122)
			SCRAP VALUE								(1,122)	(1,122)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	152.00 CY	28	88.08 /MH	2,504		-	-	2,504
			Earthwork, Excavation			28		2,504				2,504
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS	5,156.00 CY	1,684	74.10 /MH	124,789	210,880	-	-	335,670
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION	38,100.00 CY	12,444	74.10 /MH	922,124	1,558,290	-	-	2,480,414
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	CREDIT FOR REUSE OF CAUSEWAY STONE	-5,156.00 CY		74.10 /MH		(210,880)	-	-	(210,880)
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	152.00 CY	50	74.10 /MH	3,679	6,217	-	-	9,896

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			Erosion and Sedimentation Control			14,178		1,050,593	1,564,507			2,615,099
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		174.00 AC	2,469	74.64 /MH	184,309	265,611	-	-	449,920
			LANDSCAPING			2,469		184,309	265,611			449,920
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	3,935.00 CY		196.64 /MH			157,400	-	157,400
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (7870+3935)	11,805.00 CY		196.64 /MH			708,300	-	708,300
			Soil Remediation							865,700		865,700
			CIVIL WORK			16,676		1,237,405	1,830,118	865,700		3,933,223
			ACCOUNT B DEMOLITION ACCOUNT B			17,340		1,297,855	1,830,118	865,700	(1,122)	3,992,551
ACCOUNT C			DEMOLITION ACCOUNT C									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SLUICE GATE APRON 16'X34'X6'	121.00 CY	150	89.94 /MH	13,469		-	-	13,469
			EQUIPMENT/ BUILDING FOUNDATION	SLUICE GATE THROAT 16'X34'X6'	121.00 CY	150	89.94 /MH	13,469		-	-	13,469
			EQUIPMENT/ BUILDING FOUNDATION	RIGHT GATE APRON 137.85X34'X6'	1,042.00 CY	1,290	89.94 /MH	115,987		-	-	115,987
			EQUIPMENT/ BUILDING FOUNDATION	RIGHT GATE THROAT 137.85X34'X6'	1,042.00 CY	1,290	89.94 /MH	115,987		-	-	115,987
			EQUIPMENT/ BUILDING FOUNDATION	1 CENTER GATE APRON 127.9X30X4.5	640.00 CY	792	89.94 /MH	71,240		-	-	71,240
			EQUIPMENT/ BUILDING FOUNDATION	2 CENTER GATE APRON 127.9X30X4.5	640.00 CY	792	89.94 /MH	71,240		-	-	71,240
			EQUIPMENT/ BUILDING FOUNDATION	CENTER GATE THROAT 127.9X40'X10'	1,895.00 CY	2,345	89.94 /MH	210,936		-	-	210,936
			EQUIPMENT/ BUILDING FOUNDATION	LEFT GATE APRON 92.44X34X6'	698.00 CY	864	89.94 /MH	77,696		-	-	77,696
			EQUIPMENT/ BUILDING FOUNDATION	LEFT GATE THROAT 92.44X34X6'	698.00 CY	864	89.94 /MH	77,696		-	-	77,696
			GENERATOR HOUSE		2,890.00 CY	3,577	89.94 /MH	321,691		-	-	321,691
			CONCRETE			12,113		1,089,409				1,089,409
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	221.00 TN	247	79.62 /MH	19,667		-	-	19,667
			STEEL			247		19,667				19,667
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	272.5'X30'X60'TALL	490,500.00 CF	2,104	89.81 /MH	189,001		-	-	189,001
			ARCHITECTURAL			2,104		189,001				189,001
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO PENSTOCKS	10 GENERATORS AT 11,800# EA	59.00 TN	584	85.53 /MH	49,963		-		49,963
			BAR RACKS	10 AT 5 TONS EACH	50.00 TN	111	121.33 /MH	13,514		-		13,514
			STOP LOGS	10 AT 5 TONS EACH	50.00 TN	111	121.33 /MH	13,514		-		13,514
			MECHANICAL EQUIPMENT			807		76,992				76,992
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (STEEL)	3.40 TN	10	80.14 /MH	801		-	-	801
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (CU)	1.85 TN	5	80.14 /MH	436		-	-	436
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			ELECTRICAL EQUIPMENT			30		2,415				2,415
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS	0	121.33 /MH	13		-	10,000	10,013
			WASTE			0		13			10,000	10,013
			WHOLE PLANT DEMOLITION			15,301		1,377,498			10,000	1,387,498
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO PENSTOCKS	-59.00 TN		79.62 /MH		-	-	(6,967)	(6,967)
			MIXED STEEL	BAR RACKS	-50.00 TN		79.62 /MH		-	-	(5,904)	(5,904)
			MIXED STEEL	STOP LOGS	-50.00 TN		79.62 /MH		-	-	(5,904)	(5,904)
			MIXED STEEL	GENERATOR HOUSE	-122.60 TN		79.62 /MH		-	-	(14,477)	(14,477)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-3.40 TN		79.62 /MH		-	-	(401)	(401)
			MIXED STEEL								(33,653)	(33,653)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-1.85 TN		79.62 /MH		-	-	(5,883)	(5,883)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			COPPER								(56,763)	(56,763)
			SCRAP VALUE								(90,416)	(90,416)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED CREDIT EXCAVATION FOR RIPRAP (152-95)	-55.00 CY	-10	88.08 /MH	(906)		-	-	(906)
			Earthwork, Excavation			-10		(906)				(906)
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	ADDITIONAL CAUSEWAY RIPRAP FOR PHASE 3	1,700.00 CY	555	74.10 /MH	41,145	69,530	-	-	110,675
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	ADDITIONAL CREDIT FOR REUSE OF PHASE 3 CAUSEWAY STONE	-1,700.00 CY		74.10 /MH		(69,530)	-	-	(69,530)
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT RETAINING WALLS - CREDIT (152-80)	-72.00 CY	-24	74.10 /MH	(1,743)	(2,945)	-	-	(4,687)
			Erosion and Sedimentation Control			532		39,402	(2,945)			36,457
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	ADDITIONAL LIME ADDITIVE FOR DRYING PHASE 3 (6158-3935)	2,223.00 CY		196.64 /MH			88,920	-	88,920
			REMOVAL OF LOCALIZED SILT AT DAM	ADDITIONAL LOAD, MIX AND HAUL LIME AND SEDIMENT MIX PHASE 3 (18473-11805)	6,668.00 CY		196.64 /MH			400,080	-	400,080
			Soil Remediation							489,000		489,000
			CIVIL WORK			521		38,496	(2,945)	489,000		524,551
			ACCOUNT C DEMOLITION ACCOUNT C			**15,823**		**1,415,994**	**(2,945)**	**489,000**	**(80,416)**	**1,821,633**

EXHIBIT 3
Buchanan Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33738B

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BUCHANAN
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33738B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33738B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	41,800					41,800
	TOTAL DIRECT	41,800					41,800

Estimate No.: 33738B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	41,800		
Scrap Value			
	41,800	**41,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		41,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	4,200		
93-8 EPC Fee			
	4,200	**46,000**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	8,400		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	800		
	9,200	**55,200**	
Escalation:			
96-1 Escalation on Const Equip			
96-2 Escalation on Engr Equip			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Process Eq			
96-5 Escalation on Indirects			
		55,200	
		55,200	
Total		***55,200***	

Estimate No..: 33738B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

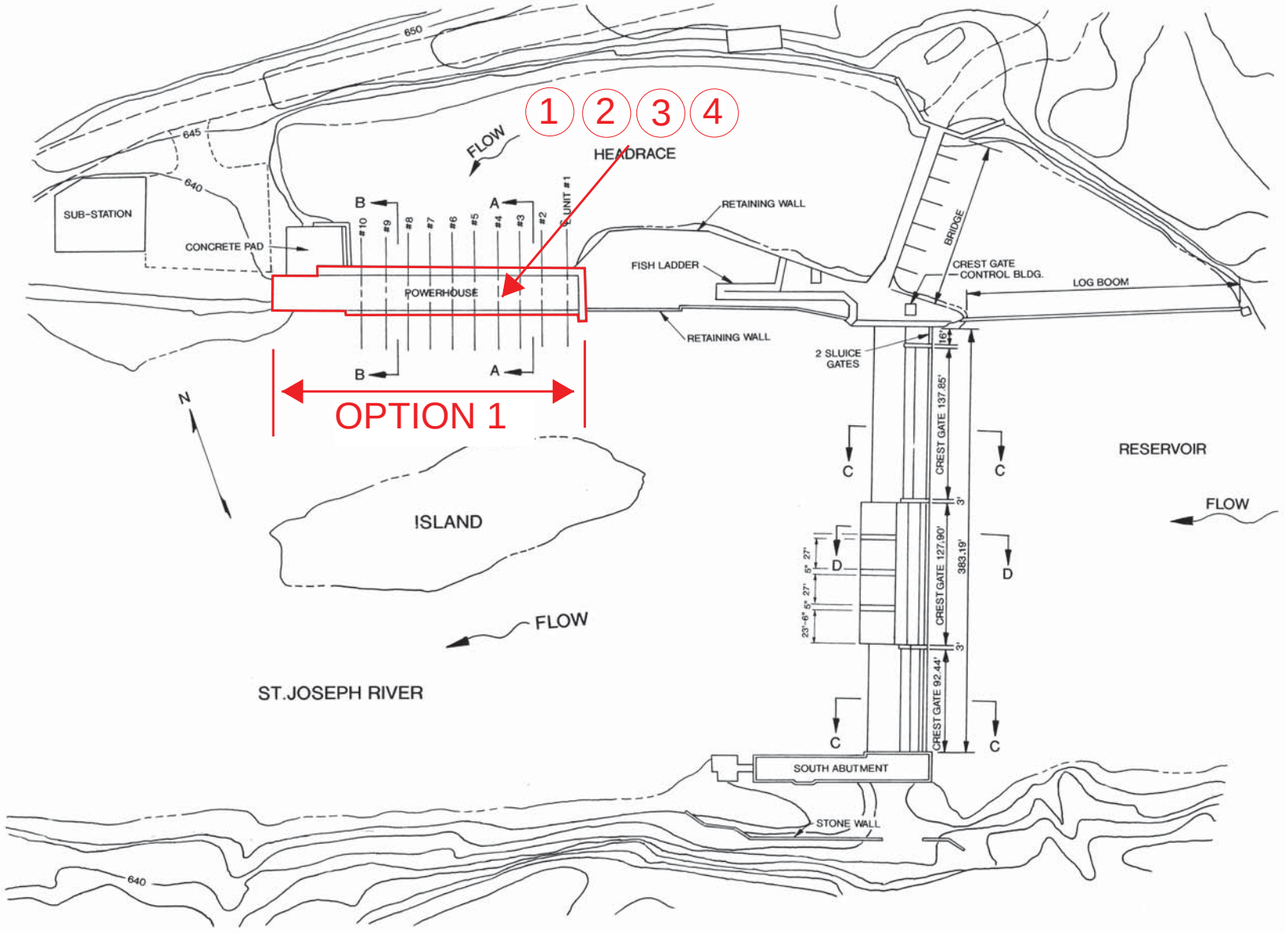
AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - CONTROL /INSTRUMENT PANELS	20 PANELS 1X3X9' TALL	20.00 CY		121.33 /MH			38,000	-	38,000
			ASBESTOS REMOVAL							41,800		41,800
			WHOLE PLANT DEMOLITION							41,800		41,800
			ASBESTOS ASBESTOS REMOVAL							41,800		41,800

EXHIBIT 4
Buchanan Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

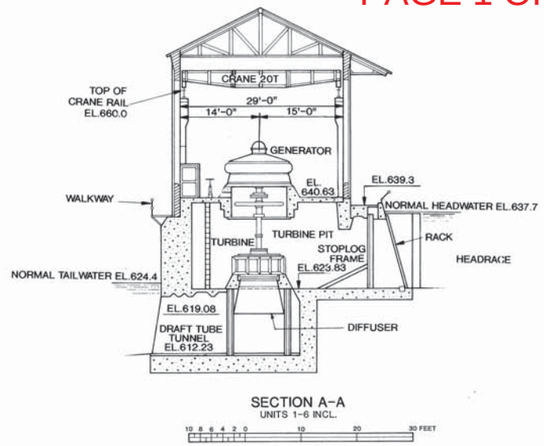
BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 1 OF 7



PLAN

0 50 100 150 200 FEET



SECTION A–A
UNITS 1–6 INCL.

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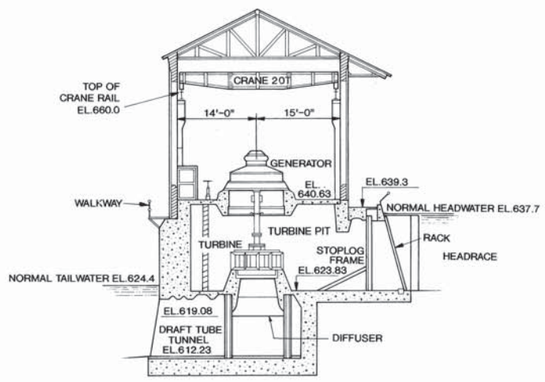

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UNITS 7–10 INCL.

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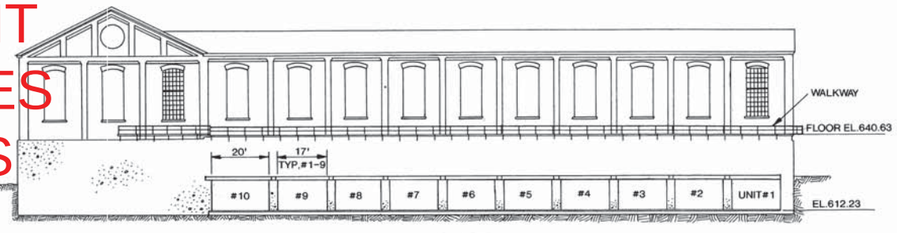


POWERHOUSE
SOUTH ELEVATION

0 20 40 60 80 100 FEET

OPTION 1

① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ GROUT DRAFT TUBES
④ REMOVE STOPLOGS

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.
BY _____
DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

FERC No. 2551–004–1

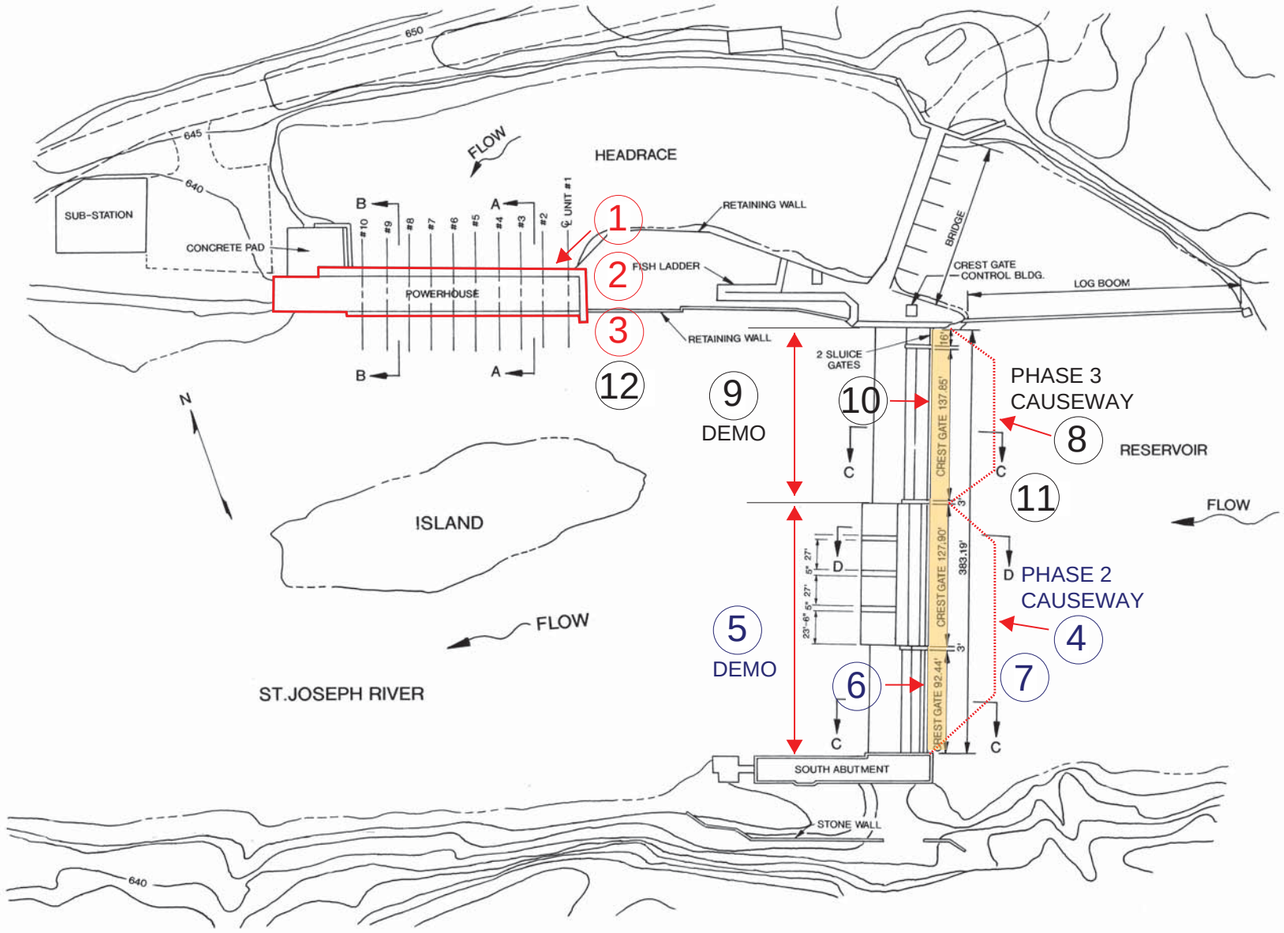
BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2012

PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

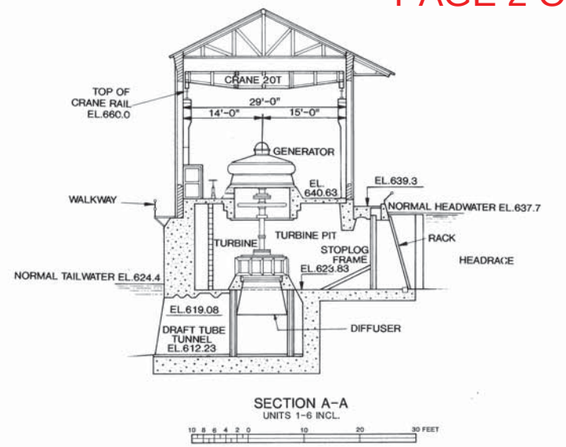
PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION
⑦ REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO SPILLWAY
⑩ PLACE RIPRAP PROTECTION
⑪ REMOVE CAUSEWAY
⑫ GROUT DRAFT TUBE



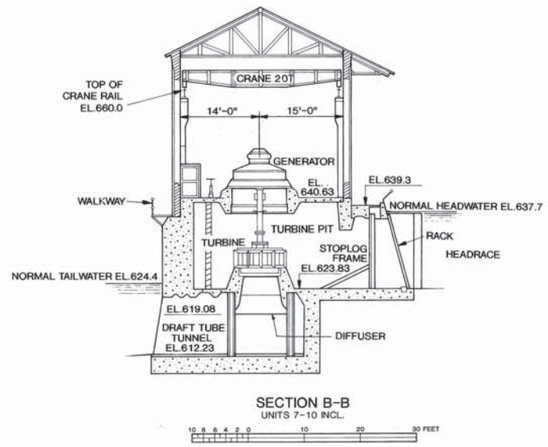
PLAN

0 50 100 150 200 FEET



SECTION A–A
UNITS 1–6 INCL.

10 8 6 4 2 0 10 20 30 FEET



SECTION B–B
UNITS 7–10 INCL.

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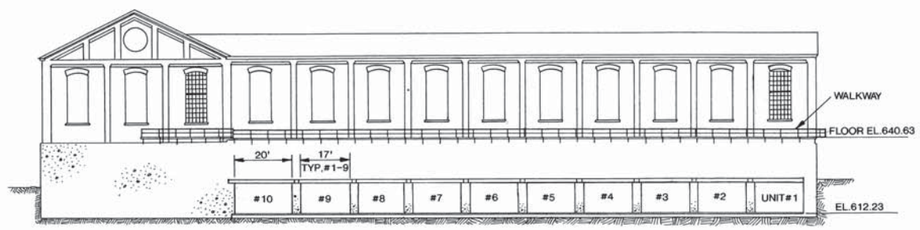
OPTION 2



POWERHOUSE
SOUTH ELEVATION

0 20 40 60 80 100 FEET

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.
BY _____
DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

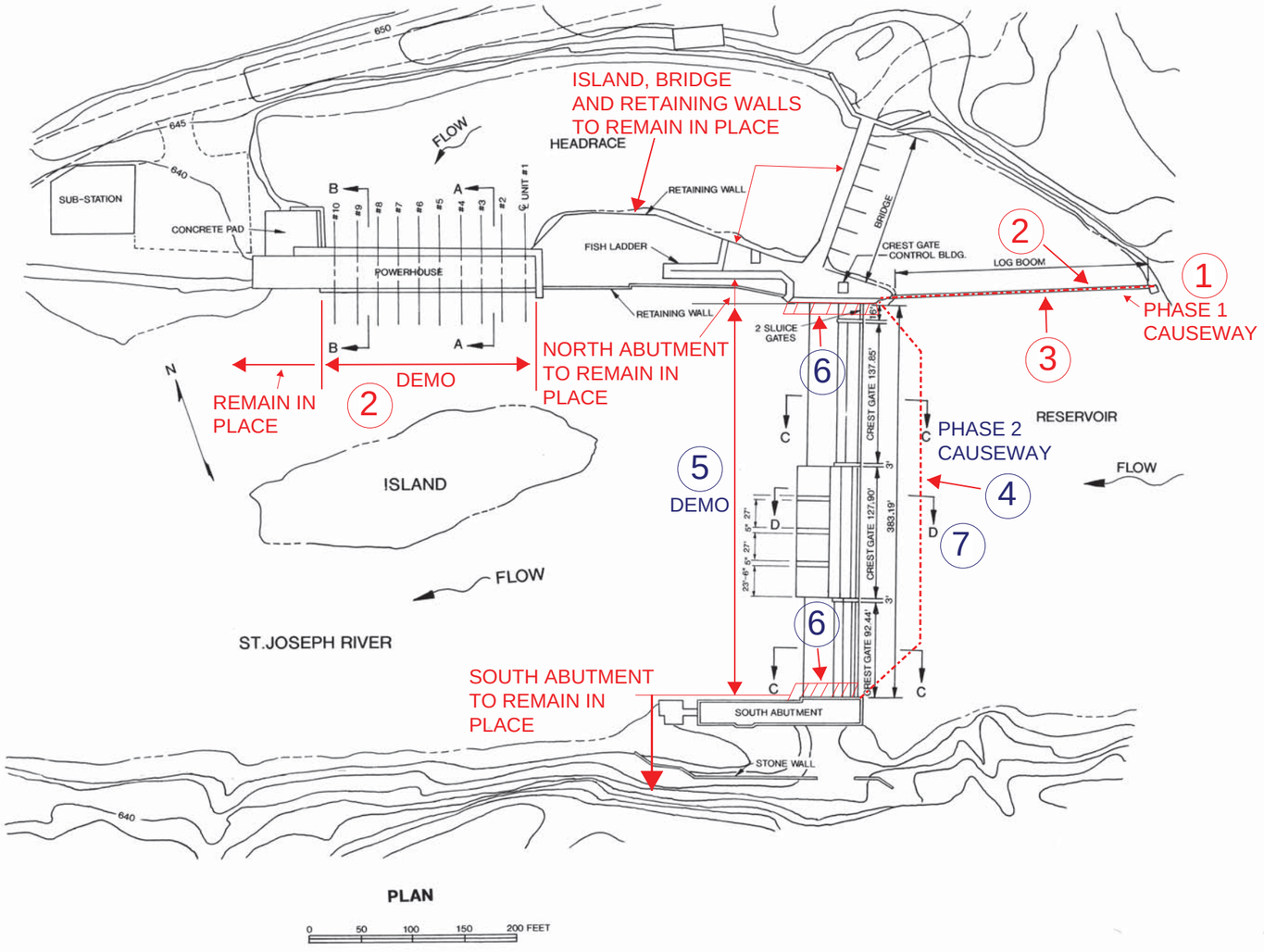
FERC No. 2551–004–1

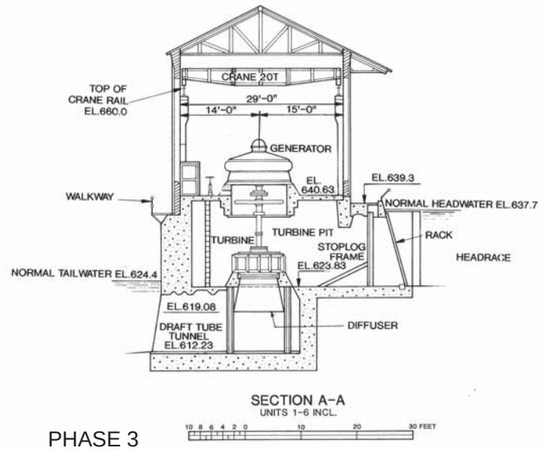
BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016

PHASE 1
1. CONSTRUCT CAUSEWAY
2. DEMO POWERHOUSE AND LOG BOOM
3. REMOVE CAUSEWAY

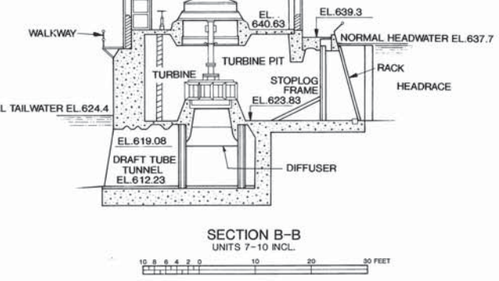
PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION AT ABUTMENTS
7. REMOVE CAUSEWAY



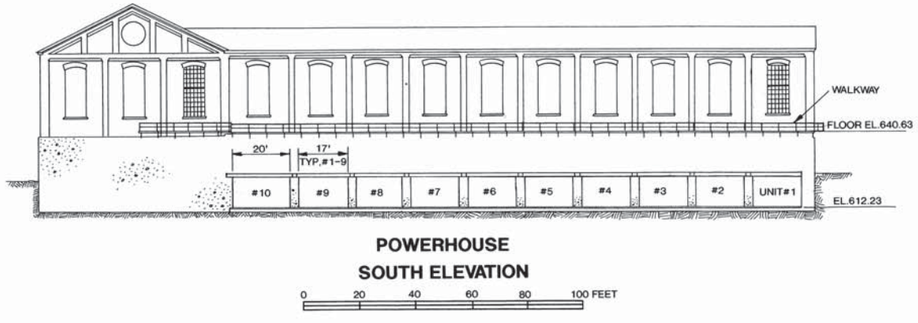


PHASE 3 CAUSEWAY

8
11



OPTION 3



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.
BY _____
DATE 10/31/91

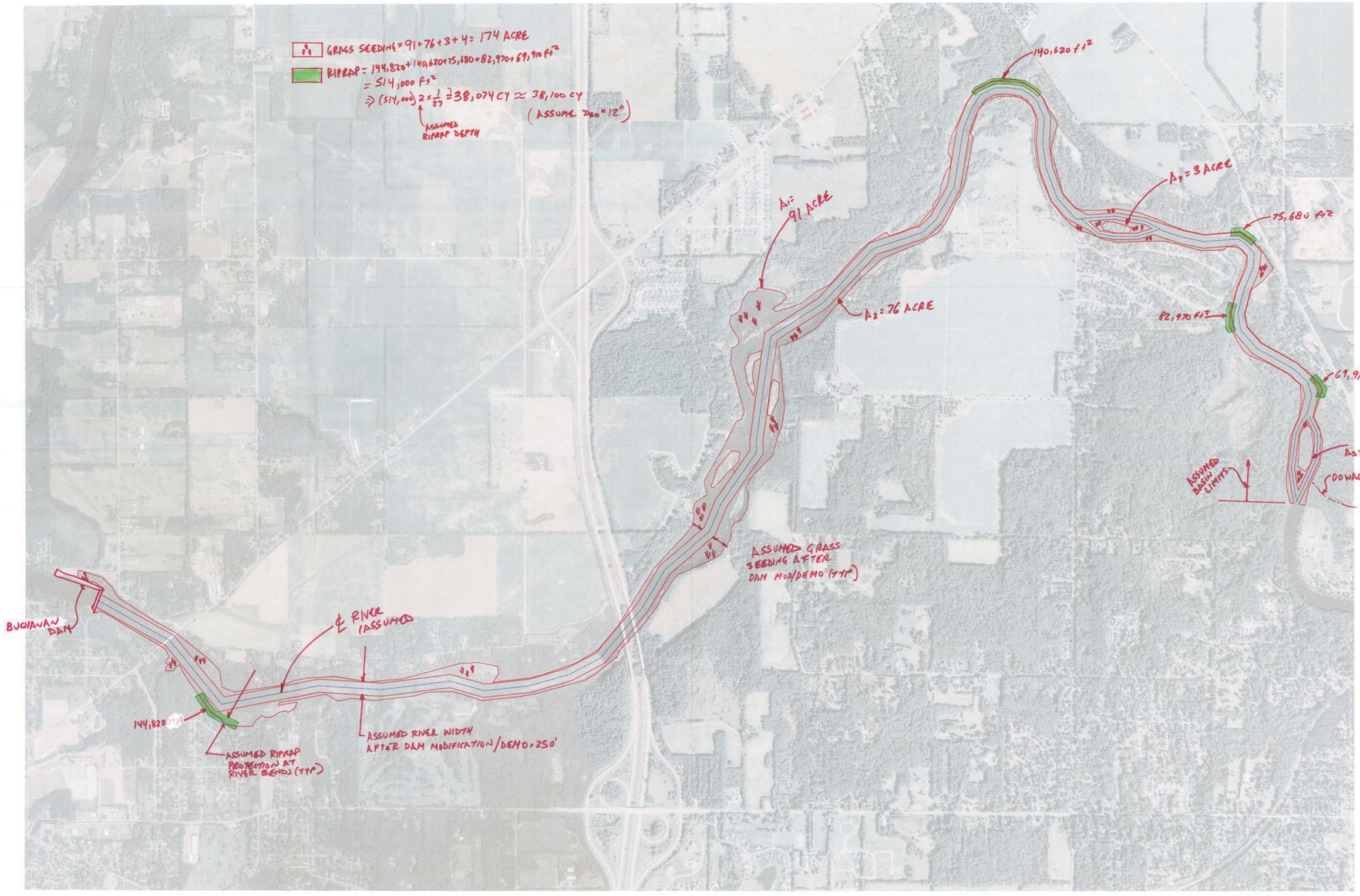
EXHIBIT F SHEET 1 OF 2

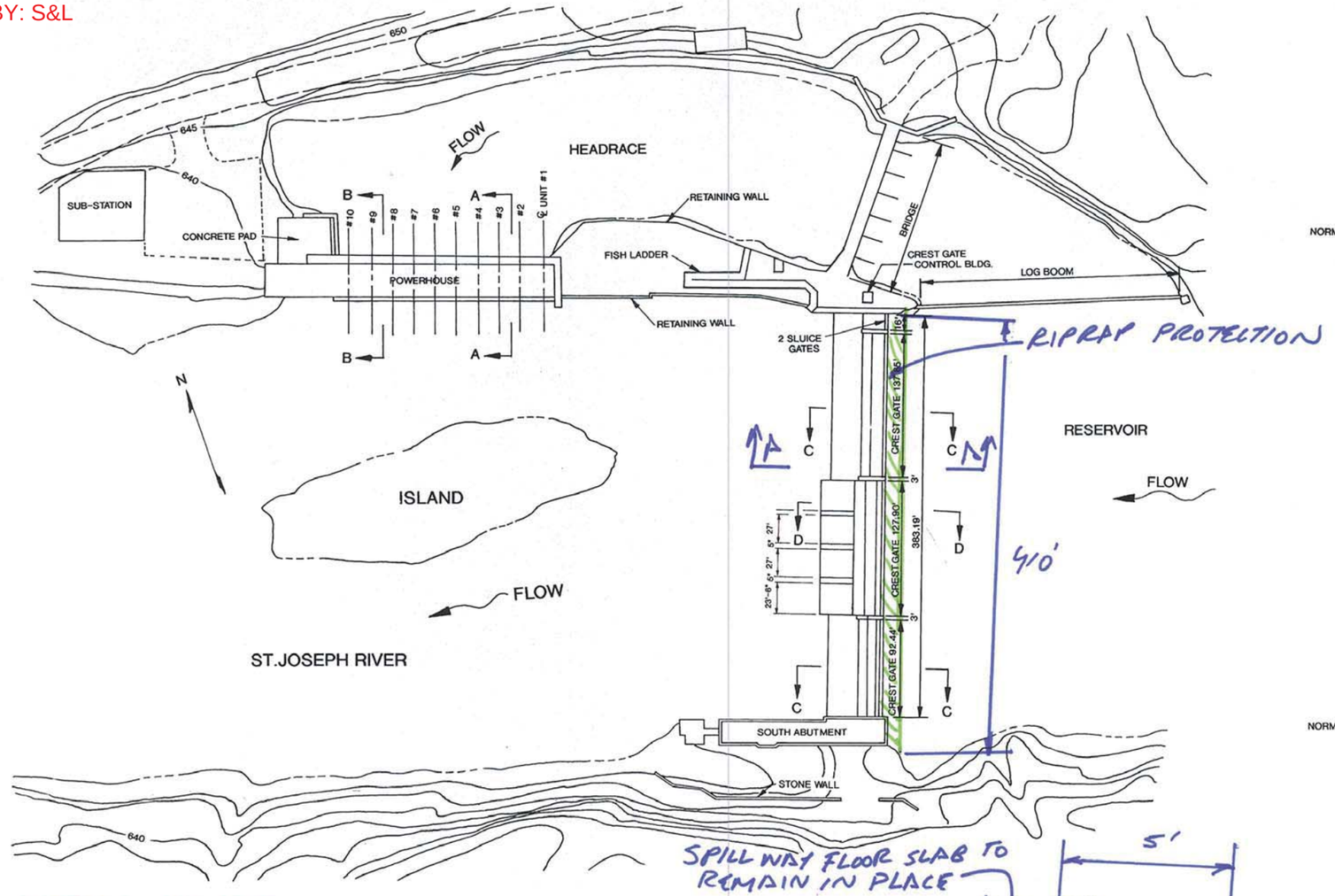
INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

FERC No. 2551-004-1

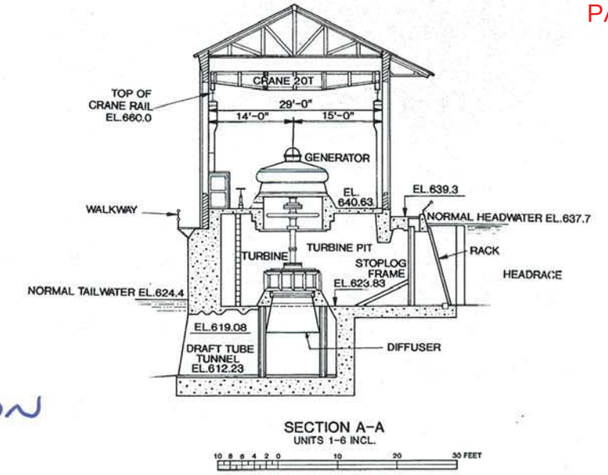
BUCHANAN			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	174	ACRE	
RIPRAP PROTECTION	38,100	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	152	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	152	CY	2 ft riprap protection @ D(50)=12"

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	174	ACRE	
RIPRAP PROTECTION	38,100	CY	2 ft riprap protection @ D(50)=12"
~~BASIN FILL~~	~~86,100~~	~~CY~~	
~~RIPRAP PROTECTION FOR CONCRETE REMOVAL~~	~~4,180~~	~~CY~~	~~2 ft riprap protection @ D(50)=12"~~
RIVERBED EXCAVATION FOR RIPRAP	95	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT RETAINING WALLS	80	CY	2 ft riprap protection @ D(50)=12"

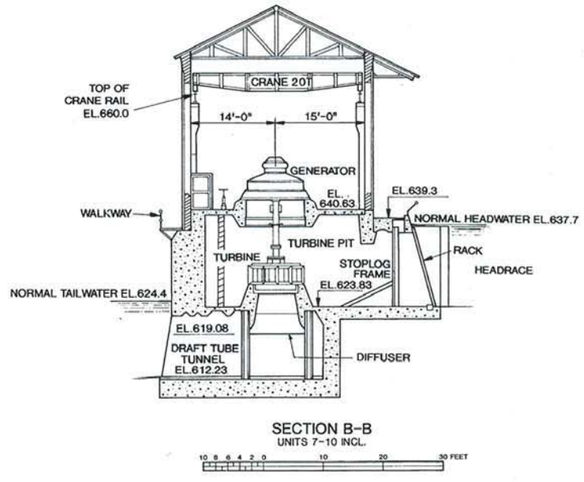

GRASS SEEDING = 91+76+3+4 = 174 ACRE
RIPRAP = 144,820+140,620+75,680+82,970+69,910 FT²
= 514,000 FT²
⇒ (514,000) 2 × 1/27 = 38,074 CY ≈ 38,100 CY
(ASSUME D50 = 12")
ASSUMED RIPRAP DEPTH
140,620 FT²
A1 = 91 ACRE
A2 = 76 ACRE
A4 = 3 ACRE
75,680 FT²
82,970 FT²
69,910 FT²
A5 = 3 ACRE
ASSUMED BASIN LIMITS
DOWNSTREAM END
BUCHANAN DAM
℄ RIVER (ASSUMED)
144,820 FT²
ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 250'
ASSUMED GRASS SEEDING AFTER DAM MOD/DEMO (TYP)
GRAPHIC SCALE
N



RIPRAP PROTECTION



SECTION A–A
UNITS 1–6 INCL.



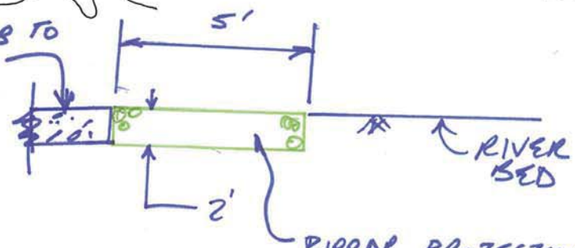
SECTION B–B
UNITS 7–10 INCL.

I&M CONCEPTUAL DEMO ESTIMATE
BUCHANAN RETIREMENT OPTION 2
CIVIL QUANTITIES

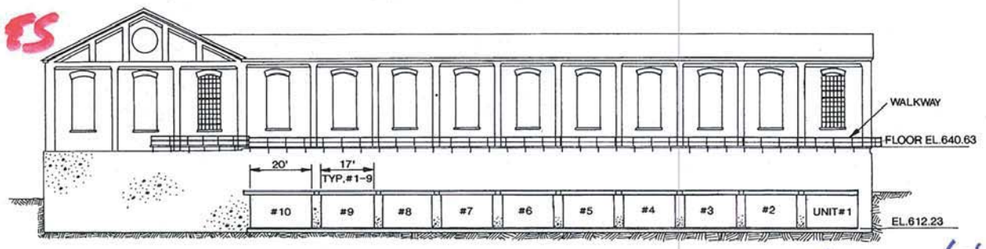
PLAN

0 50 100 150 200 FEET

SPILL WAY FLOOR SLAB TO REMAIN IN PLACE



RIPRAP PROTECTION PAD AT RIVER BOTTOM ADJACENT TO SPILLWAY FLOOR SLAB TO REMAIN IN PLACE



POWERHOUSE
SOUTH ELEVATION

0 20 40 60 80 100 FEET

SECTION A
N.T.S.

$V_{RIPRAP} = (5' \times 2')(410')(\frac{1}{27}) = 152\ CY$

$V_{CUT} = V_{RIPRAP} = 152\ CY$

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.

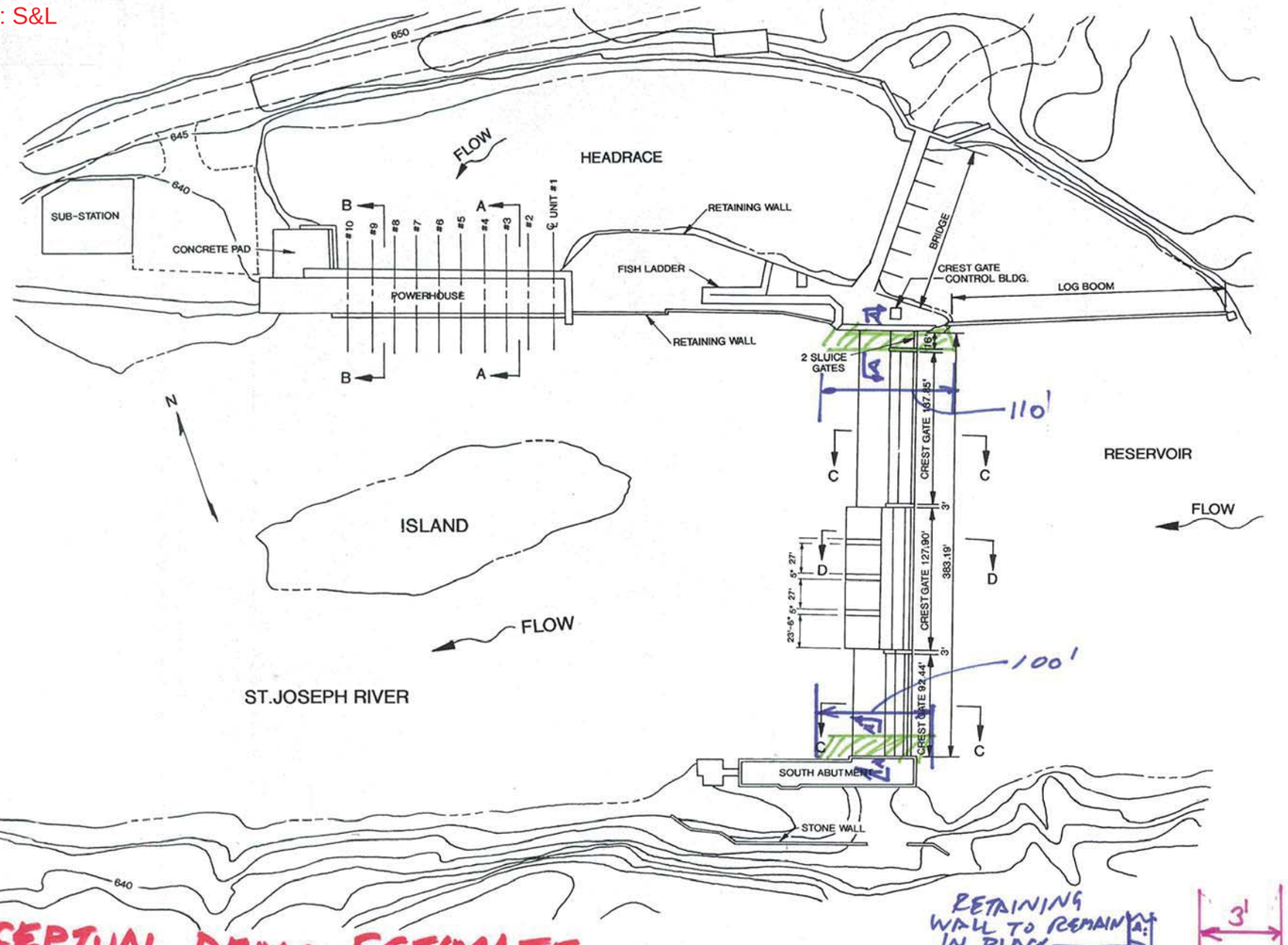
BY Brett Bennett

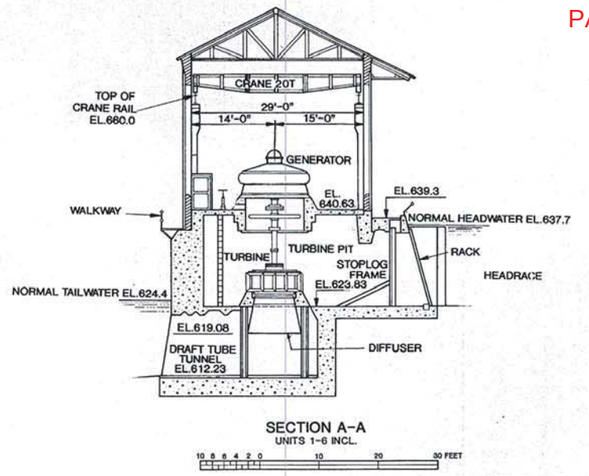
DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

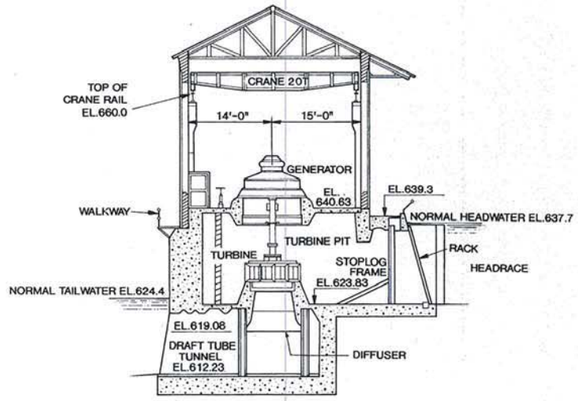
INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L



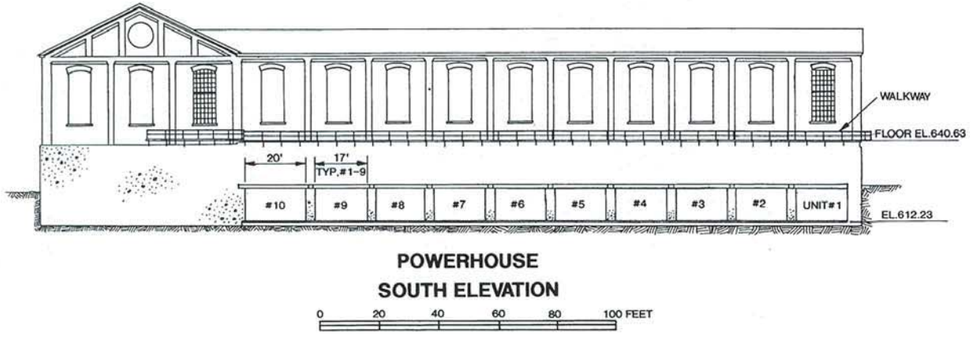


SECTION A-A
UNITS 1-6 INCL.
10 8 6 4 2 0 10 20 30 FEET

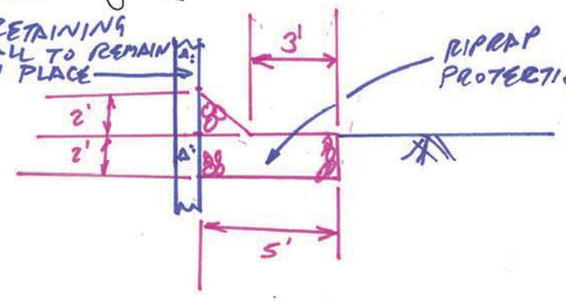


SECTION B-B
UNITS 7-10 INCL.
10 8 6 4 2 0 10 20 30 FEET

I&M CONCEPTUAL DEMO ESTIMATE
BUCHANAN RETIREMENT OPTION 3
CIVIL QUANTITIES



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET



SECTION A
N.T.S

$V_{RIPRAP} = (124\,ft^2)(110+100) \times \frac{1}{27} = 95\ CY$

$V_{OUT} = (10\,ft^2)(110+100) \times \frac{1}{27} = 80\ CY$

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.
BY Robert Bennett
DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO.2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

FERC No. 2551-004-1

Constantine Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

AEP AMERICAN® ELECTRIC POWER

Constantine Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	01/29/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger RC	A.D. Chapin ADChapin D. F. Franczak D.F. Franczak	T. J. Meehan JMeehan	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Constantine Hydroelectric Plant located in the City of Constantine, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from left to right referenced facing downstream) a left abutment embankment section, a flashboard regulated spillway, a canal headgate structure, a power canal (headrace) flanked by earth embankments on either side of the canal, the powerhouse and a separate saddle dike on the left bank of the power canal. The powerhouse is located downstream of the spillway, at the downstream end of the headrace, and returns flow to the river. The powerhouse contains four (4) operating S. Morgan Francis turbine generators rated at 0.3 MW each, installed in 1923 or 1924.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Constantine Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33707B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$3,711,338
Scrap Value	($92,058)
Direct Cost Subtotal	$3,619,279
Indirect Cost	$371,000
Contingency Cost	$830,000
Escalation Cost	$0
Total Project Cost	$4,820,280

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$238,539
Scrap Value	($83,035)
Direct Cost Subtotal	$174,023
Indirect Cost	$17,000
Contingency Cost	$67,700
Escalation Cost	$0
Total Project Cost	$258,723

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$3,375,501
Scrap Value	($83,035)
Direct Cost Subtotal	$3,292,465
Indirect Cost	$337,000
Contingency Cost	$755,000
Escalation Cost	$0
Total Project Cost	$4,384,465

Asbestos Removal Conceptual Cost Estimate No. 33739B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $55,200. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the three (3) main power transformers located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The separate brick storage building near the entrance road will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Tuesday December 15, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Constantine Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement. There is no reservoir control at this plant, hence electrical power is not required for retirement option 1. The tailwater at Constantine is controlled by the gated spillway structure at Mottville Hydroelectric Plant, approximately seven (7) miles downstream.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are twenty (20) control boards mounted on 3' x 9' transite (asbestos) panels and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Constantine Plant Drawings: One-Line Diagrams, No. 14-12001 and No. E-1000, 12/16/06.

5.2 Findlay Engineering, Inc., Supporting Technical Information Document, Constantine Hydroelectric Project, October, 2005.

.

EXHIBIT 1
Constantine Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Constantine Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33707B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 238,539	$ 3,375,501	$ 3,711,338
Scrap Value	$ (83,035)	$ (83,035)	$ (92,058)
Direct Cost Subtotal	$ 174,023	$ 3,292,465	$ 3,619,279
Indirect Cost	$ 17,000	$ 337,000	$ 371,000
Contingency Cost	$ 67,700	$ 755,000	$ 830,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 258,723	$ 4,384,465	$ 4,820,280

EXHIBIT 2
Constantine Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33707B

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	CONSTANTINE
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33707B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33707B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A	18,520	(83,035)	83,209	1,411	155,330	174,023
ACCOUNT B	DEMOLITION ACCOUNT B	523,340		1,485,812	14,749	1,109,290	3,118,442
ACCOUNT C	DEMOLITION ACCOUNT C	(105,880)	(9,023)		4,890	441,717	326,814
	TOTAL DIRECT	**435,980**	**(92,058)**	**1,569,021**	**21,050**	**1,706,337**	**3,619,279**

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	1,706,337		21,050
Material	1,569,021		
Subcontract	435,980		
Scrap Value	(92,058)		
	3,619,280	**3,619,280**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		3,619,280	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	371,000		
93-8 EPC Fee			
	371,000	**3,990,280**	
Contingency:			
94-1 Contingency on Material	314,000		
94-2 Contingency on Labor	341,000		
94-3 Contingency on Sub.	87,000		
94-6 Contingency on Scrap	14,000		
94-5 Contingency on Indirect	74,000		
	830,000	**4,820,280**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		4,820,280	
		4,820,280	
Total		***4,820,280***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .3 MW GENERATOR	4 GENERATORS AT 6300# EA	12.60 TN	125	85.53 /MH	10,670		-		10,670
			DEMO TURBINE AND GEARS	4 TURBINES AT 9300# EA	18.60 TN	184	85.53 /MH	15,751		-		15,751
			TURBINE ROOM 6.5 TON OVERHEAD CRANE		5.00 TN	50	121.33 /MH	6,006		-		6,006
			MECHANICAL EQUIPMENT			358		32,428				32,428
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (STEEL)	8.40 TN	25	80.14 /MH	1,979		-	-	1,979
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (CU)	4.40 TN	13	80.14 /MH	1,037		-	-	1,037
			MISCELLANEOUS ELECTRICAL EQUIPMENT		4.00 TN	12	80.14 /MH	942		-	-	942
			ELECTRICAL EQUIPMENT			49		3,958				3,958
			WHOLE PLANT DEMOLITION			408		36,385				36,385
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	4 GENERATORS AT 6300# EA	-12.60 TN		79.62 /MH		-	-	(1,488)	(1,488)
			MIXED STEEL	4 TURBINES AT 9300# EA	-18.60 TN		79.62 /MH		-	-	(2,196)	(2,196)
			MIXED STEEL	TURBINE ROOM 6.5 TON OVERHEAD CRANE	-5.00 TN		79.62 /MH		-	-	(590)	(590)
			MIXED STEEL	80 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-8.40 TN		79.62 /MH		-	-	(992)	(992)
			MIXED STEEL								(5,443)	(5,443)
		18.30.00	COPPER									
			COPPER	4 GENERATORS 4 @ 4000 LB EA	-8.00 TN		79.62 /MH		-	-	(25,440)	(25,440)
			COPPER	CABLE	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	MISC. TRANSFORMERS & MOTORS	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-4.40 TN		79.62 /MH		-	-	(13,992)	(13,992)
			COPPER								(77,592)	(77,592)
			SCRAP VALUE								(83,035)	(83,035)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			MASS EXCAVATION, COMMON EARTH USING 1.5 CY BACKHOE AND (6) 12 CY DUMP TRUCKS,	DIKE EXCAVATION TO PROVIDE RACEWAY DRAINAGE- MATERIAL PLACED DIRECTLY DOWNSTREAM OF HEADGATES	5,075.00 CY	363	196.64 /MH	71,360		-	-	71,360
			EXCAVATION			363		71,360				71,360
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT DIKE MODIFICATION	1,765.00 CY	576	74.10 /MH	42,718	72,189	-	-	114,906
			Erosion and Sedimentation Control			576		42,718	72,189			114,906
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT HEADGATE	LIME ADDITIVE FOR DRYING	463.00 CY		196.64 /MH			18,520	-	18,520
			Soil Remediation							18,520		18,520
			CIVIL WORK			939		114,078	72,189	18,520		204,787
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	116.00 CY	64	76.27 /MH	4,867	11,020	-	-	15,887
			Concrete			64		4,867	11,020			15,887
			CONCRETE			64		4,867	11,020			15,887
			ACCOUNT A DEMOLITION ACCOUNT A			1,411		155,330	83,209	18,520	(83,035)	174,023
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SPILLWAY THROAT	670.00 CY	829	89.94 /MH	74,579		-	-	74,579
			CONCRETE			829		74,579				74,579
			WHOLE PLANT DEMOLITION			829		74,579				74,579
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		21.17.00	EXCAVATION									
			MASS EXCAVATION, COMMON EARTH USING 1.5 CY BACKHOE AND (6) 12 CY DUMP TRUCKS,	RIVERBED EXCAVATION FOR RIPRAP PLACEMENT	90.00 CY	6	196.64 /MH	1,266		-	-	1,266
			EXCAVATION			6		1,266				1,266
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	NEW STONE REQD IF CAUSEWAY STONE IS REUSED (24070-4297)	19,773.00 CY	6,458	74.10 /MH	478,561	808,716	-	-	1,287,276
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS	4,297.00 CY	1,403	74.10 /MH	103,999	175,747	-	-	279,746
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RELOCATE CAUSE WAY STONE FOR RIVER BEND PR0TECTION	4,297.00 CY	1,403	74.10 /MH	103,999		-	-	103,999
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT FLOOR SLABS TO REMAIN IN PLACE	90.00 CY	29	74.10 /MH	2,178	3,681	-	-	5,859
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT ABUTMENTS TO REMAIN IN PLACE (240-90)	150.00 CY	49	74.10 /MH	3,630	6,135	-	-	9,765
			Erosion and Sedimentation Control			9,344		692,368	994,279			1,686,647
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		322.00 AC	4,570	74.64 /MH	341,078	491,533	-	-	832,611
			LANDSCAPING			4,570		341,078	491,533			832,611
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	2,000.00 CY		196.64 /MH			80,000	-	80,000
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (4000+2000)	6,000.00 CY		196.64 /MH			360,000	-	360,000
			REMOVAL OF LOCALIZED SILT AT HEADGATE	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 926+463	1,389.00 CY		196.64 /MH			83,340	-	83,340
			Soil Remediation							523,340		523,340
			CIVIL WORK			13,920		1,034,711	1,485,812	523,340		3,043,863
			ACCOUNT B DEMOLITION ACCOUNT B			14,749		1,109,290	1,485,812	523,340		3,118,442
ACCOUNT C			DEMOLITION ACCOUNT C									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SPILLWAY APRON	579.00 CY	717	89.94 /MH	64,450		-	-	64,450
			EQUIPMENT/ BUILDING FOUNDATION	HEADGATE BAYS	738.00 CY	913	89.94 /MH	82,148		-	-	82,148
			EQUIPMENT/ BUILDING FOUNDATION	SPILLWAY FOUNDATION	358.00 CY	443	89.94 /MH	39,850		-	-	39,850
			EQUIPMENT/ BUILDING FOUNDATION	POWER HOUSE	1,270.00 CY	1,572	89.94 /MH	141,366		-	-	141,366
			CONCRETE			3,645		327,813				327,813
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE 140'X58X50'	101.50 TN	113	79.62 /MH	9,033		-	-	9,033
			STEEL			113		9,033				9,033
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	140X58X50' TALL	203,000.00 CF	871	89.81 /MH	78,221		-	-	78,221
			ARCHITECTURAL			871		78,221				78,221
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO PENSTOCKS	4 GENERATORS AT 7,800# EA	15.60 TN	154	85.53 /MH	13,211		-		13,211
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			SLUICE GATES	1 AT 4 TONS EACH	4.00 TN	9	121.33 /MH	1,081		-		1,081
			STOP LOGS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			MECHANICAL EQUIPMENT			252		25,103				25,103
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS		121.33 /MH			-	10,000	10,000
			WASTE								10,000	10,000
			WHOLE PLANT DEMOLITION			4,882		440,170			10,000	450,170
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO PENSTOCKS	-15.60 TN		79.62 /MH		-	-	(1,842)	(1,842)
			MIXED STEEL	BAR RACKS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	SLUICE GATES	-4.00 TN		79.62 /MH		-	-	(472)	(472)
			MIXED STEEL	STOP LOGS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	GENERATOR HOUSE	-101.50 TN		79.62 /MH		-	-	(11,985)	(11,985)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			MIXED STEEL								(19,023)	(19,023)
			SCRAP VALUE								(19,023)	(19,023)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			MASS EXCAVATION, COMMON EARTH USING 1.5 CY BACKHOE AND (6) 12 CY DUMP TRUCKS,	RIVERBED EXCAVATION FOR RIPRAP PLACEMENT (200-90)	110.00 CY	8	196.64 /MH	1,547		-	-	1,547
			EXCAVATION			8		1,547				1,547
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING CREDIT (1519-2000)	-481.00 CY		196.64 /MH			(19,240)	-	(19,240)
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX CREDIT (4556-6000))	-1,444.00 CY		196.64 /MH			(86,640)	-	(86,640)
			Soil Remediation							(105,880)		(105,880)
			CIVIL WORK			8		1,547		(105,880)		(104,333)
			ACCOUNT C DEMOLITION ACCOUNT C			**4,890**		**441,717**		**(105,880)**	**(9,023)**	**326,814**

EXHIBIT 3
Constantine Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33739B

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	CONSTANTINE
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33739B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33739B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	41,800					41,800
	TOTAL DIRECT	41,800					41,800

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	41,800		
Scrap Value			
	41,800	**41,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		41,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	4,200		
93-8 EPC Fee			
	4,200	**46,000**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	8,400		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	800		
	9,200	**55,200**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		55,200	
		55,200	
Total		***55,200***	

Estimate No..: 33739B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

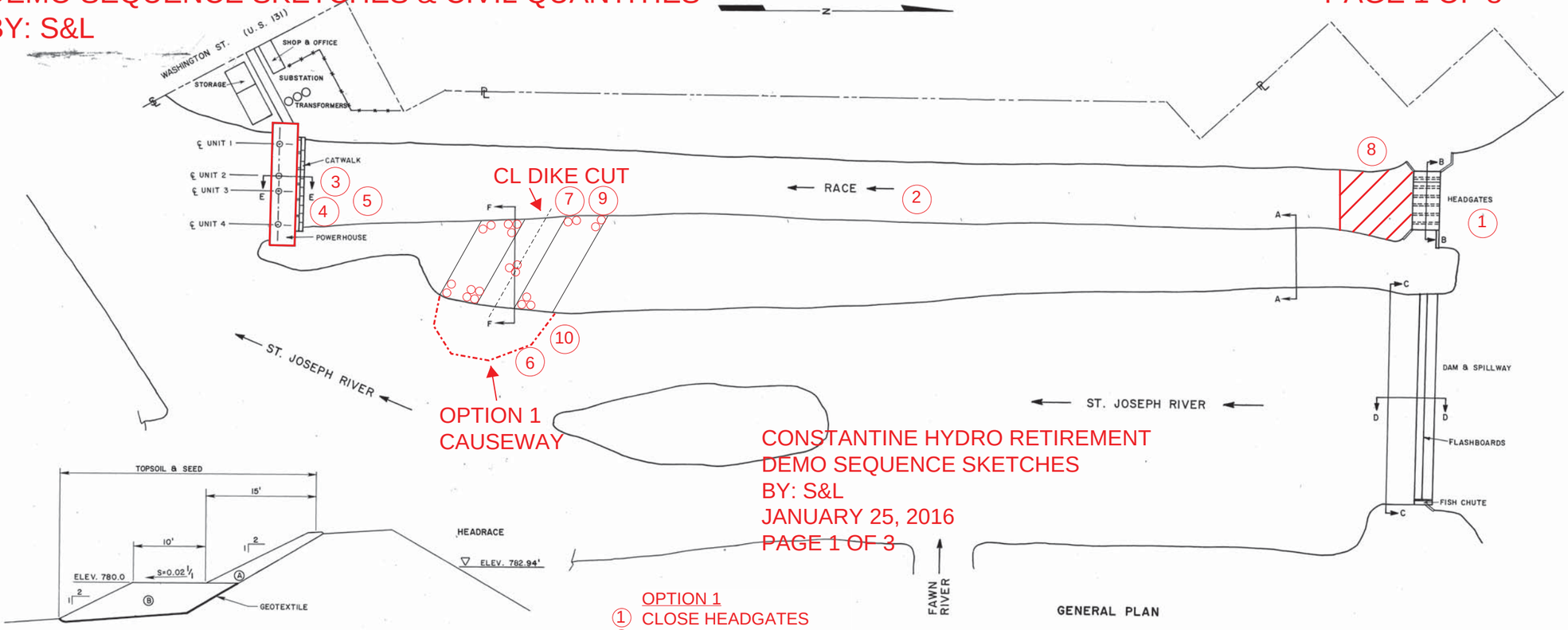
AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

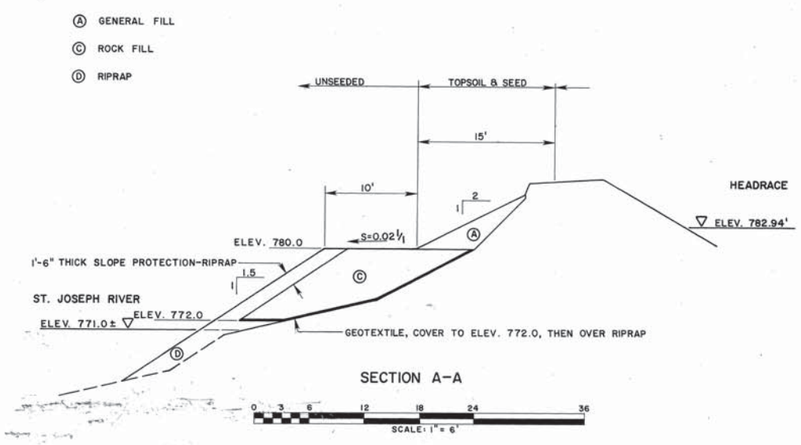
Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - CONTROL /INSTRUMENT PANELS	20 PANELS 1X3X9' TALL	20.00 CY		121.33 /MH			38,000	-	38,000
			ASBESTOS REMOVAL							41,800		41,800
			WHOLE PLANT DEMOLITION							41,800		41,800
			ASBESTOS ASBESTOS REMOVAL							41,800		41,800

EXHIBIT 4
Constantine Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

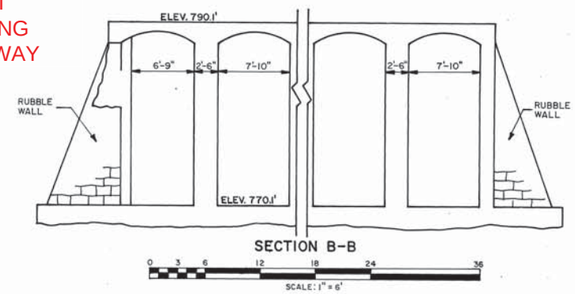
JANUARY 25, 2016
PAGE 1 OF 8





CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES
BY: S&L
JANUARY 25, 2016
PAGE 1 OF 3

OPTION 1
1. CLOSE HEADGATES
2. DRAIN HEADRACE
3. INSTALL STOPLOGS
4. REMOVE EQUIPMENT
5. GROUT PENSTOCKS
6. CONSTRUCT CAUSEWAY
7. CUT DIKE
8. PLACE CUT MATERIAL BEHIND HEADGATES
9. PLACE RIPRAP AT NEW DIKE OPENING
10. REMOVE CAUSEWAY



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BY A.T. Williams Jr.
VICE PRESIDENT

EXHIBIT F
SHEET 1 OF 3

MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

FERC NO. 10661-1

CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
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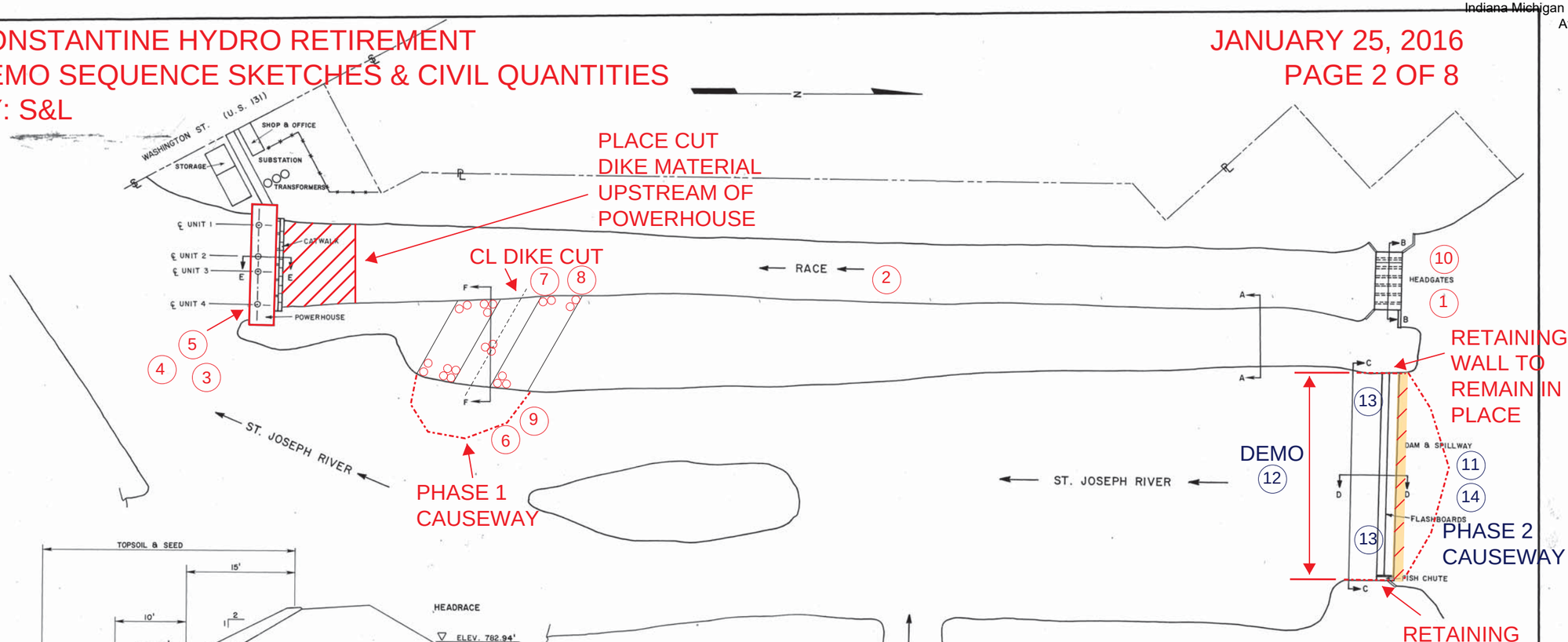

PHASE 1
1. CLOSE HEADGATES
2. DRAIN RACEWAY
3. INSTALL STOPLOGS
4. REMOVE EQUIPMENT
5. GROUT PENSTOCKS
6. CONSTRUCT CAUSEWAY
7. CUT DIKE
8. PLACE RIPRAP AT NEW DIKE OPENING
9. REMOVE CAUSEWAY
10. OPEN HEADGATES

PHASE 2
11. CONSTRUCT CAUSEWAY
12. DEMO SPILLWAY SECTIONS
13. PLACE RIPRAP PROTECTION
14. REMOVE CAUSEWAY

OPTION 2

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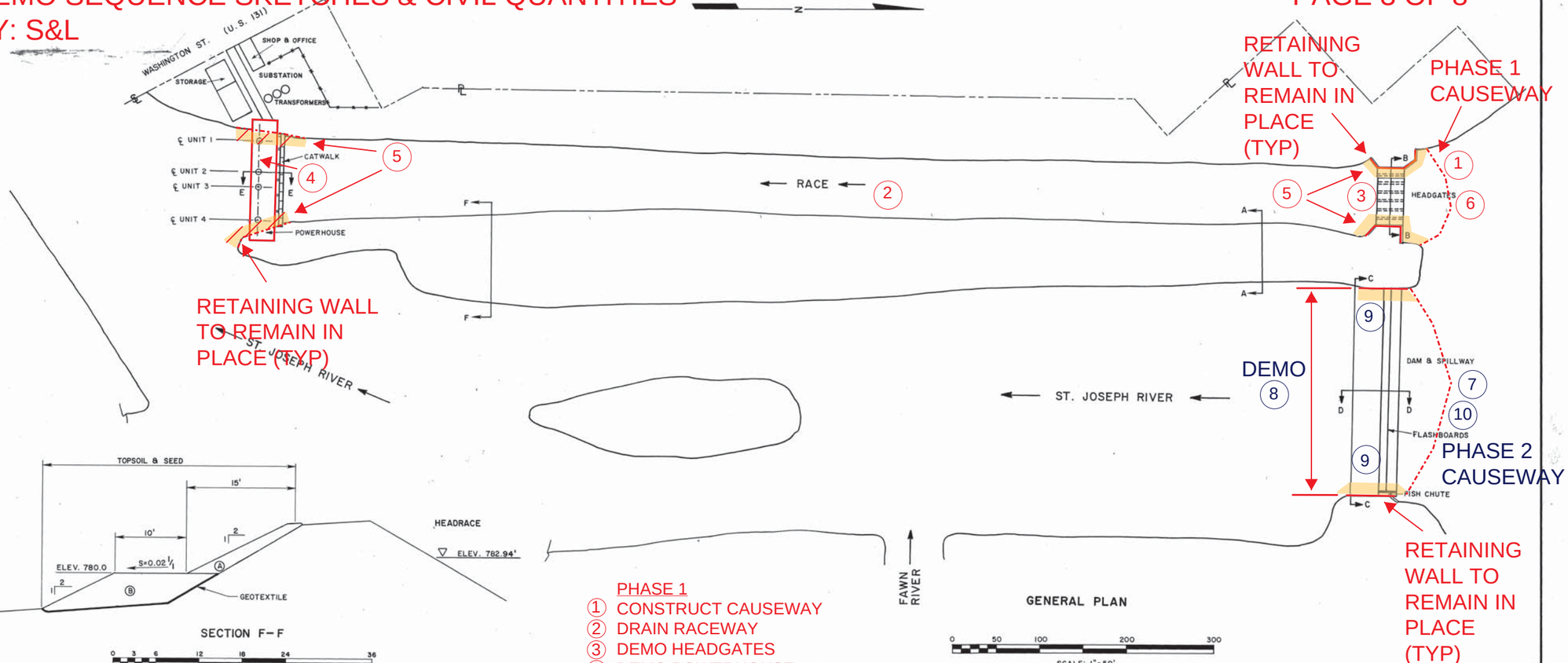
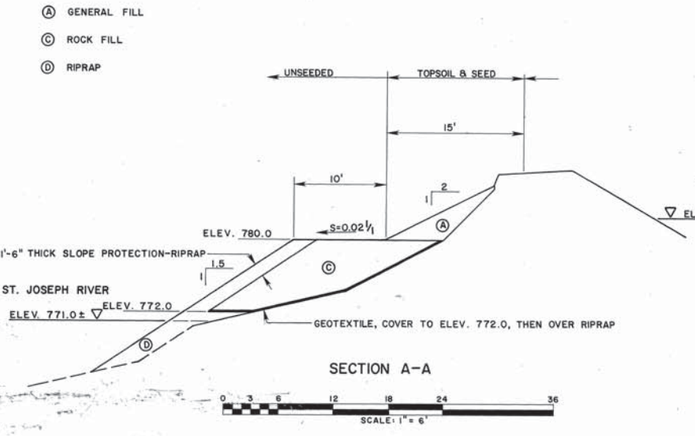
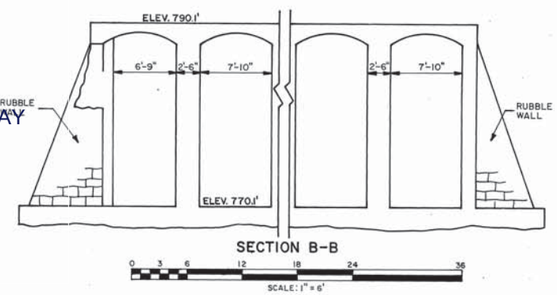




PHASE 1
1. CONSTRUCT CAUSEWAY
2. DRAIN RACEWAY
3. DEMO HEADGATES
4. DEMO POWERHOUSE
5. PLACE RIPRAP AT RETAINING WALLS
6. REMOVE CAUSEWAY

PHASE 2
7. CONSTRUCT CAUSEWAY
8. DEMO SPILLWAY
9. PLACE RIPRAP PROTECTION AT RETAINING WALLS
10. REMOVE CAUSEWAY

OPTION 3



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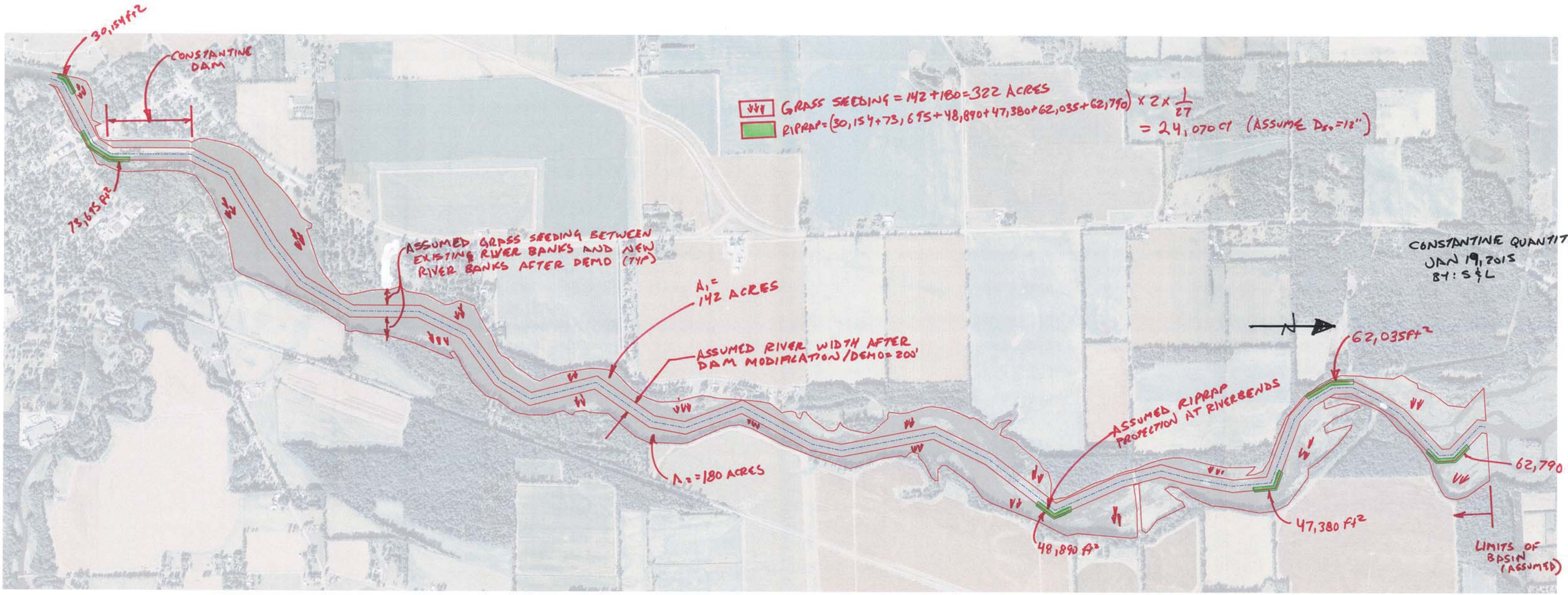
CONSTANTINE			
OPTION 1			
ITEM	QUANTITY	UNIT	REMARKS
DIKE EXCAVATION	5,075	CY	DIKE EXCAVATION TO DRAIN HEADRACE. PLACE MATERIAL BEHIND HEADGATE
RIPRAP PROTECTION AT DIKE MODIFICATION	1,765	CY	2 ft riprap protection @ D(50)=12"

OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	322	ACRE	
RIPRAP PROTECTION	24,070	CY	2 ft riprap protection @ D(50)=12"
DIKE EXCAVATION	5,075	CY	DIKE EXCAVATION TO DRAIN HEADRACE. PLACE MATERIAL UPSTREAM OF POWERHOUSE
RIPRAP PROTECTION AT DIKE MODIFICATION	1,765	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT FLOOR SLAB TO REMAIN IN PLACE	90	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP PLACEMENT	90	CY	TO BE REPLACED BY RIPRAP

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	322	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	24,070	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	200	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT ABUTMENTS	240	CY	2 ft riprap protection @ D(50)=12"

Note: Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg


30,154 ft²
CONSTANTINE DAM
73,675 ft²
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DEMO (TYP.)
A₁ = 142 ACRES
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 200'
A₂ = 180 ACRES
GRASS SEEDING = 142 + 180 = 322 ACRES
RIPRAP = (30,154 + 73,675 + 48,890 + 47,380 + 62,035 + 62,790) x 2 x 1/27
= 24,070 CY (ASSUME D₅₀ = 12")
CONSTANTINE QUANTITIES
JAN 19, 2015
BY: S&L
62,035 ft²
ASSUMED RIPRAP PROTECTION AT RIVERBENDS
62,790 ft²
47,380 ft²
48,890 ft²
LIMITS OF BASIN (ASSUMED)
500' 0' 500' 1000'
GRAPHIC SCALE

2' DEEP RIPRAP PROTECTION
$A_{RIPRAP} = 23,830 ft^2$
$V_{RIPRAP} = (23,930) \times 2 \times \frac{1}{27} = 1,765 CY$ (*)

PLACE 5,075 CY OF CUT DOWNSTREAM OF HEADGATES

$A_{RIPRAP} = 23,830 ft^2$

WASHINGTON ST. (U.S. 131)
SHOP & OFFICE
STORAGE
SUBSTATION
TRANSFORMERS
℄ UNIT 1
℄ UNIT 2
℄ UNIT 3
℄ UNIT 4
CATWALK
POWERHOUSE
TOP OF RIPRAP EL. 784
RIPRAP PROTECTION
RACE
HEADGATES
NEW SPILLWAY
B SPILLWAY EL. 787
2:1 SLOPE (TYP.)
TOP OF SPILLWAY EL. 787.5' (TYP.)
35'
3.5'
FLOW
ST. JOSEPH RIVER
DAM & SPILLWAY
FLASHBOARDS
FISH CHUTE
FAWN RIVER

QUANTITY
* APPLIES TO OPTION 1 & 2

$V_{CUT} = V_{A \to B} = (0+1200)\frac{1}{2} \times 39 \times 1/27 = 870 CY$
$V_{B \to C} = (1200+1200)\frac{1}{2} \times 75 \times 1/27 = 3335 CY$
$V_{C \to D} = V_{A \to B} = 870 CY$
$\Sigma V = 870 + 3335 + 870 = 5,075 CY$ (CUT) (*)

$A_A = 0$
$A_B = 1200 ft^2$
$A_C = 1200 ft^2$
$A_D = 0$

T/DIKE EL. 787.5

TOPSOIL & SEED
15'
10'
2
1
ELEV. 780.0
S=0.02 1/1
A
B
HEADRACE
ELEV. 782.94'
GEOTEXTILE
$A = 1200 ft^2$
B/RACE EL. 769 +/-
B/RIVER EL. 763 +/-

SECTION F-F
SCALE: 1" = 6'

GENERAL PLAN
SCALE: 1" = 50'

SECTION B & C
N.T.S.

Ⓐ GENERAL FILL
Ⓒ ROCK FILL
Ⓓ RIPRAP

UNSEEDED
TOPSOIL & SEED
15'
10'
2
1
HEADRACE
ELEV. 782.94'
ELEV. 780.0
S=0.02 1/1
1'-6" THICK SLOPE PROTECTION-RIPRAP
1.5
1
ST. JOSEPH RIVER
ELEV. 771.0 ±
ELEV. 772.0
GEOTEXTILE, COVER TO ELEV. 772.0, THEN OVER RIPRAP

SECTION A-A
SCALE: 1" = 6'

ELEV. 790.1'
6'-9"
2'-6"
7'-10"
2'-6"
7'-10"
RUBBLE WALL
RUBBLE WALL
ELEV. 770.1'

SECTION B-B
SCALE: 1" = 6'

1 & M CONCEPTUAL DEMO ESTIMATE
CONSTANTINE RETIREMENT OPTION 1 & 2
CIVIL QUANTITIES

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VICE PRESIDENT

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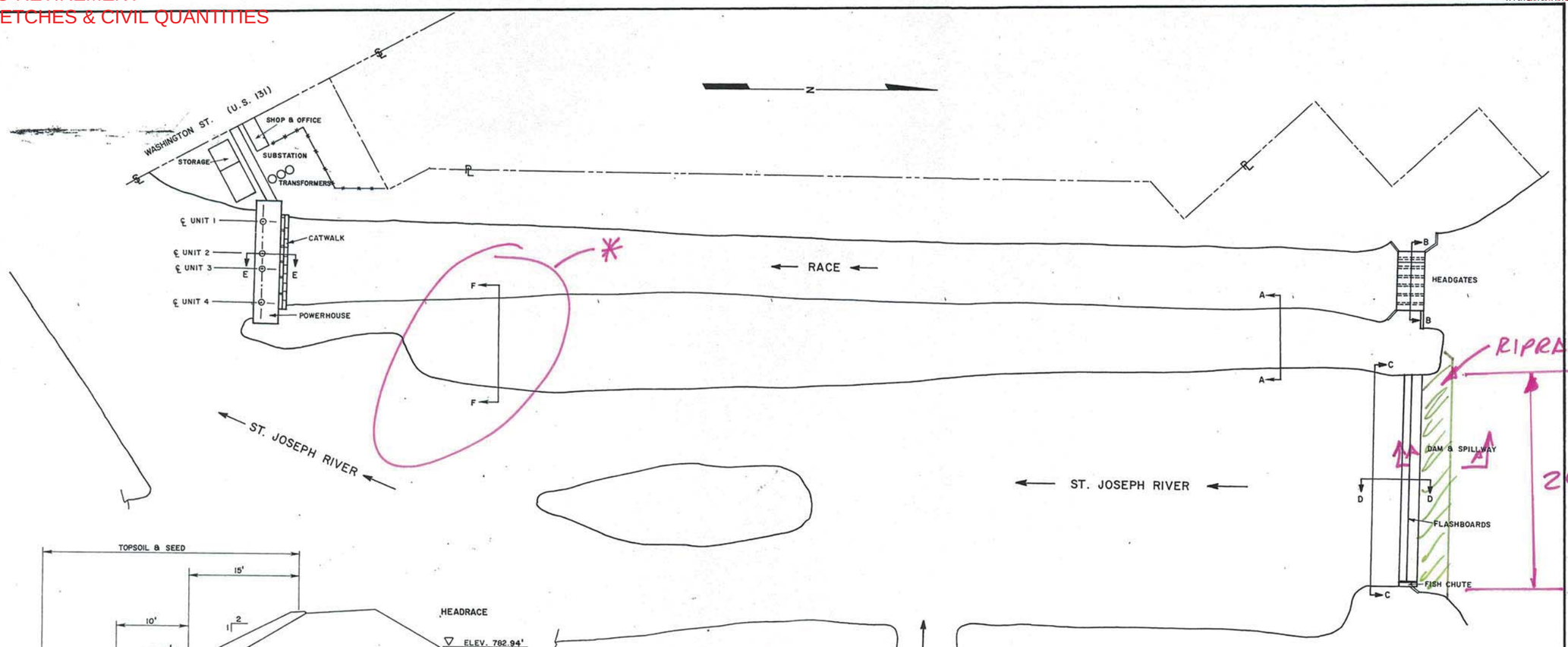

$V_{RIPRAP} = (2 \times 5)(240)\left(\frac{1}{27}\right) \approx 90\ CY$

$V_{CUT} = V_{RIPRAP} = 90\ CY$

* SEE PAGE 3 FOR DIKE EXCAVATION & RIPRAP QUANTITIES

T&M CONCEPTUAL DEMO ESTIMATE
CONSTANTINE RETIREMENT OPTION 2
CIVIL QUANTITIES

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CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
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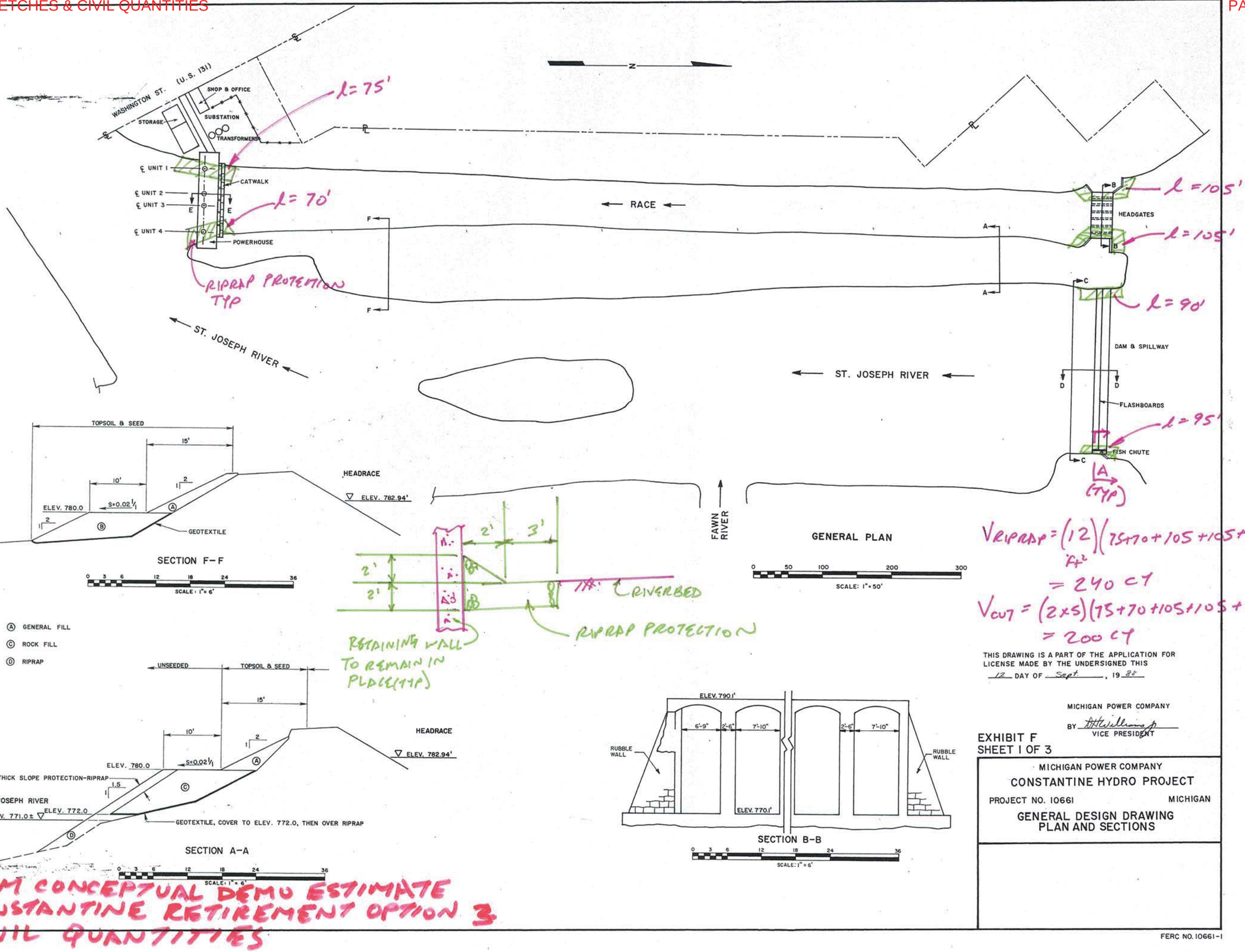

$V_{RIPRAP} = \left(\frac{12}{ft^2}\right)(75+70+105+105+90+95)\frac{1}{27}$
$= 240\ CY$

$V_{CUT} = (2\times5)(75+70+105+105+90+95)\frac{1}{27}$
$= 200\ CY$

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CONSTANTINE HYDRO PROJECT
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I&M CONCEPTUAL DEMO ESTIMATE
CONSTANTINE RETIREMENT OPTION 3
CIVIL QUANTITIES

Elkhart Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

AEP AMERICAN ELECTRIC POWER

Elkhart Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	02/01/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger RC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan TJMeehan	All

Elkhart Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

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1.0 INTRODUCTION

The Elkhart Hydroelectric Plant located in the City of Elkhart, Indiana is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from right to left referenced facing downstream) a gated reinforced concrete spillway, an integral intake and powerhouse at the south (left) end of the spillway and concrete retaining walls at both abutments. Between the spillway and powerhouse, there is a concrete gravity cantilevered wall that extends downstream. The spillway is equipped with eleven (11) tainter gates which regulate headwater. The powerhouse consists of the intake and turbine pits followed by the generator room. The powerhouse contains three (3) horizontal shaft operating turbine generators. Unit 1 is rated at 1.44 MW and was installed in 1913 and Units 2 and 3 are rated at 1 MW each and were installed in 1921.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Elkhart Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33708B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$7,177,344
Scrap Value	($165,008)
Direct Cost Subtotal	$7,012,335
Indirect Cost	$718,000
Contingency Cost	$1,604,000
Escalation Cost	$0
Total Project Cost	$9,334,335

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$68,721
Scrap Value	($42,715)
Direct Cost Subtotal	$26,005
Indirect Cost	$2,000
Contingency Cost	$20,000
Escalation Cost	$0
Total Project Cost	$48,005

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$5,182,983
Scrap Value	($148,382)
Direct Cost Subtotal	$5,034,600
Indirect Cost	$515,000
Contingency Cost	$1,161,900
Escalation Cost	$0
Total Project Cost	$6,711,500

Asbestos Removal Conceptual Cost Estimate No. 33740B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $363,660. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the two (2) main power transformers located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Tuesday December 15, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Elkhart Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of tainter gates No. 10 and 11 after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are nine (9) control boards mounted on 3' x 9' transite (asbestos) panels and eighteen (18) 4kV breakers mounted in cubicles constructed of transite panels. An allowance for removal and disposal of these transite panels is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Elkhart Plant Drawings: One-Line Diagrams, No. 5839-1000-35, Revision 35 and No. 13-12000-1, 6/5/98.

5.2 American Electric Power, Supporting Technical Information Document, Elkhart Hydroelectric Project, September, 2007.

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EXHIBIT 1
Elkhart Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Elkhart Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33708B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 68,721	$ 5,182,983	$ 7,177,344
Scrap Value	$ (42,715)	$ (148,382)	$ (165,008)
Direct Cost Subtotal	$ 26,005	$ 5,034,600	$ 7,012,335
Indirect Cost	$ 2,000	$ 515,000	$ 718,000
Contingency Cost	$ 20,000	$ 1,161,900	$ 1,604,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 48,005	$ 6,711,500	$ 9,334,335

EXHIBIT 2
Elkhart Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33708B

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33708B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33708B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(42,715)		748	68,721	26,005
ACCOUNT B	DEMOLITION ACCOUNT B	663,920	(105,667)	2,073,405	30,143	2,376,937	5,008,595
ACCOUNT C	DEMOLITION ACCOUNT C	617,580	(16,626)	25,644	15,074	1,351,137	1,977,735
	TOTAL DIRECT	1,281,500	(165,009)	2,099,049	45,964	3,796,795	7,012,335

Estimate No.: 33708B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	3,796,795		45,964
Material	2,099,049		
Subcontract	1,281,500		
Scrap Value	(165,009)		
	7,012,335	**7,012,335**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		7,012,335	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	718,000		
93-8 EPC Fee			
	718,000	**7,730,335**	
Contingency:			
94-1 Contingency on Material	420,000		
94-2 Contingency on Labor	759,000		
94-3 Contingency on Sub.	256,000		
94-6 Contingency on Scrap	25,000		
94-5 Contingency on Indirect	144,000		
	1,604,000	**9,334,335**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		9,334,335	
		9,334,335	
Total		***9,334,335***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO 1.44 MW CAMELBACK GENERATOR	1 GENERATORS AT 16000# EA	8.00 TN	88	85.53 /MH	7,527		-		7,527
			DEMO 1.0 MW CAMELBACK GENERATOR	2 GENERATORS AT 13000# EA	13.00 TN	143	85.53 /MH	12,232		-		12,232
			DEMO SYNC CONDENSER	1 AT 8000# EA	4.00 TN	44	85.53 /MH	3,764		-		3,764
			DEMO 1.44 MW FRANCIS TURBINE AND GEARS	1 GENERATORS AT 11.8TN EA	11.80 TN	130	85.53 /MH	11,103		-		11,103
			DEMO 1.0 MW FRANCIS TURBINE AND GEARS	2 GENERATORS AT 9.5 EA	19.00 TN	209	85.53 /MH	17,878		-		17,878
			TURBINE ROOM 30 TON OVERHEAD CRANE	CRANE IS NOT MOTORIZED	40.00 TN	89	121.33 /MH	10,812		-		10,812
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			MECHANICAL EQUIPMENT			748		68,721				68,721
			WHOLE PLANT DEMOLITION			748		68,721				68,721
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO 1.44 MW CAMELBACK GENERATOR	-8.00 TN		79.62 /MH		-	-	(945)	(945)
			MIXED STEEL	DEMO 1.0 MW CAMELBACK GENERATOR	-5.80 TN		79.62 /MH		-	-	(685)	(685)
			MIXED STEEL	DEMO SYNC CONDENSER	-4.00 TN		79.62 /MH		-	-	(472)	(472)
			MIXED STEEL	DEMO 1.44 MW FRANCIS TURBINE AND GEARS	-11.80 TN		79.62 /MH		-	-	(1,393)	(1,393)
			MIXED STEEL	DEMO 1.0 MW FRANCIS TURBINE AND GEARS	-19.00 TN		79.62 /MH		-	-	(2,244)	(2,244)
			MIXED STEEL	TURBINE ROOM 30 TON OVERHEAD CRANE	-40.00 TN		79.62 /MH		-	-	(4,723)	(4,723)
			MIXED STEEL	BAR RACKS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL								(12,823)	(12,823)
		18.30.00	COPPER									
			COPPER	DEMO 1.44 MW CAMELBACK GENERATOR	-3.60 TN		79.62 /MH		-	-	(11,448)	(11,448)
			COPPER	DEMO 2-1.0 MW CAMELBACK GENERATOR	-5.80 TN		79.62 /MH		-	-	(18,444)	(18,444)
			COPPER								(29,892)	(29,892)
			SCRAP VALUE								(42,715)	(42,715)
			ACCOUNT A DEMOLITION ACCOUNT A			748		68,721			(42,715)	26,005
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - TOP PORTION: WEIR, GATE WALLS & HEAD WALL	6,720.00 CY	8,317	89.94 /MH	748,016		-	-	748,016
			CONCRETE			8,317		748,016				748,016
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	TAINTER GATES STRUCTURE AND WALKWAY	33.00 TN	37	79.62 /MH	2,937		-	-	2,937
			STEEL			37		2,937				2,937
		10.31.00	MECHANICAL EQUIPMENT									
			60 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			TAINTER GATES	11 AT 5 TONS EACH	55.00 TN	123	121.33 /MH	14,866		-		14,866
			TAINTER HEADGATES	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			MECHANICAL EQUIPMENT			170		20,677				20,677
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 1500KVA (STEEL)	6.00 TN	18	80.14 /MH	1,413		-	-	1,413
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 1500 KVA (CU)	3.00 TN	9	80.14 /MH	707		-	-	707
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 2500KVA (STEEL)	7.25 TN	21	80.14 /MH	1,708		-	-	1,708
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 2500 KVA (CU)	4.90 TN	14	80.14 /MH	1,154		-	-	1,154
			GENERATOR BUS TRANSFORMERS	AUTO TRANSFORMER 27/33 KV, 7500KVA (STEEL)	9.60 TN	28	80.14 /MH	2,261		-	-	2,261
			GENERATOR BUS TRANSFORMERS	AUTO TRANSFORMER 27/33 KV, 7500KVA (CU)	4.60 TN	14	80.14 /MH	1,084		-	-	1,084
			MISCELLANEOUS ELECTRICAL EQUIPMENT		8.00 TN	24	80.14 /MH	1,885		-	-	1,885
			ELECTRICAL EQUIPMENT			127		10,212				10,212
			WHOLE PLANT DEMOLITION			8,652		781,842				781,842
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	60 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	TAINTER GATES	-55.00 TN		79.62 /MH		-	-	(6,494)	(6,494)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		18.10.00	MIXED STEEL									
			MIXED STEEL	TAINTER HEADGATES	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	4.16 to 34.5 KV, 1500KVA (STEEL)	-6.00 TN		79.62 /MH		-	-	(708)	(708)
			MIXED STEEL	4.16 to 34.5 KV, 2500KVA (STEEL)	-7.25 TN		79.62 /MH		-	-	(856)	(856)
			MIXED STEEL	AUTO TRANSFORMER 27/33 KV, 7500KVA (STEEL)	-4.60 TN		79.62 /MH		-	-	(543)	(543)
			MIXED STEEL	TAINTER GATES STRUCTURE AND WALKWAY	-33.00 TN		79.62 /MH		-	-	(3,897)	(3,897)
			MIXED STEEL								(15,037)	(15,037)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	4.16 to 34.5 KV, 1500 KVA (CU)	-3.00 TN		79.62 /MH		-	-	(9,540)	(9,540)
			COPPER	4.16 to 34.5 KV, 2500 KVA (CU)	-4.90 TN		79.62 /MH		-	-	(15,582)	(15,582)
			COPPER	AUTO TRANSFORMER 27/33 KV, 7500KVA (CU)	-4.60 TN		79.62 /MH		-	-	(14,628)	(14,628)
			COPPER								(90,630)	(90,630)
			SCRAP VALUE								(105,667)	(105,667)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	115.00 CY	22	88.08 /MH	1,894		-	-	1,894
			EXCAVATION			22		1,894				1,894
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS INSTALLATION	9,778.00 CY	4,314	74.10 /MH	319,631	399,920	-	-	719,551
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	NEW STONE REQD IF CAUSEWAY STONE IS REUSED (39420-9778)	29,642.00 CY	9,682	74.10 /MH	717,418	1,212,358	-	-	1,929,775
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RELOCATE CAUSE WAY STONE FOR RIVER BEND PR0TECTION	9,778.00 CY	3,194	74.10 /MH	236,654		-	-	236,654
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT FLOOR SLABS TO REMAIN IN PLACE	115.00 CY	38	74.10 /MH	2,783	4,704	-	-	7,487
			Erosion and Sedimentation Control			17,227		1,276,486	1,616,982			2,893,468
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER	RIVERBAND STABILIZATIION	299.00 AC	4,243	74.64 /MH	316,715	456,424	-	-	773,139
			LANDSCAPING			4,243		316,715	456,424			773,139
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	2,639.00 CY		196.64 /MH			105,560	-	105,560
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (5278+2639)	7,917.00 CY		196.64 /MH			475,020	-	475,020
			REMOVAL OF LOCALIZED SILT AT HEADGATE	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 926+463	1,389.00 CY		196.64 /MH			83,340	-	83,340
			Soil Remediation							663,920		663,920
			CIVIL WORK			21,491		1,595,096	2,073,405	663,920		4,332,421
			ACCOUNT B DEMOLITION ACCOUNT B			**30,143**		**2,376,937**	**2,073,405**	**663,920**	**(105,667)**	**5,008,595**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - BOTTOM PORTION : APRON AND THROAT	3,580.00 CY	4,431	89.94 /MH	398,497		-	-	398,497
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE	6,582.00 CY	8,146	89.94 /MH	732,655		-	-	732,655
			CONCRETE			12,577		1,131,151				1,131,151
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	111.80 TN	125	79.62 /MH	9,949		-	-	9,949
			STEEL			125		9,949				9,949
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	TALL	447,520.00 CF	1,920	89.81 /MH	172,440		-	-	172,440
			ARCHITECTURAL			1,920		172,440				172,440
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO 1.44 MW PENSTOCKS	1 AT 20000# EA	10.00 TN	110	85.53 /MH	9,409		-		9,409
			DEMO 1.00 MW PENSTOCKS	2 GENERATORS AT 8 TN EA	16.00 TN	176	85.53 /MH	15,055		-		15,055

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			MECHANICAL EQUIPMENT			286		24,464				24,464
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS	0	121.33 /MH	13		10,000		10,013
			WASTE			0		13		10,000		10,013
			WHOLE PLANT DEMOLITION			14,908		1,338,018		10,000		1,348,018
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO 1.44 MW PENSTOCKS	-10.00 TN		79.62 /MH		-	-	(1,181)	(1,181)
			MIXED STEEL	DEMO 1.00 MW PENSTOCKS	-19.00 TN		79.62 /MH		-	-	(2,244)	(2,244)
			MIXED STEEL	GENERATOR HOUSE	-111.80 TN		79.62 /MH		-	-	(13,201)	(13,201)
			MIXED STEEL								(16,626)	(16,626)
			SCRAP VALUE								(16,626)	(16,626)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	EARTHWORK CUT AT DAM ABUTMENTS (330-115)	215.00 CY	40	88.08 /MH	3,542		-	-	3,542
			EXCAVATION			40		3,542				3,542
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT ABUTMENTS TO REMAIN IN PLACE (395-115)	280.00 CY	91	74.10 /MH	6,777	11,452	-	-	18,229
			Erosion and Sedimentation Control			91		6,777	11,452			18,229
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER	CREDIT (299-290)	-9.00 AC	-128	74.64 /MH	(9,533)	(13,738)	-	-	(23,272)
			LANDSCAPING			-128		(9,533)	(13,738)			(23,272)
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING (5278-2639)	2,639.00 CY		196.64 /MH			105,560	-	105,560
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX CREDIT 16284-7917)	8,367.00 CY		196.64 /MH			502,020	-	502,020
			Soil Remediation							607,580		607,580
			CIVIL WORK			4		785	(2,286)	607,580		606,079
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	294.00 CY	162	76.27 /MH	12,334	27,930	-	-	40,264
			Concrete			162		12,334	27,930			40,264
			CONCRETE			162		12,334	27,930			40,264
			ACCOUNT C DEMOLITION ACCOUNT C			**15,074**		**1,351,137**	**25,644**	**617,580**	**(16,626)**	**1,977,735**

EXHIBIT 3
Elkhart Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33740B

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33740B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33740B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	275,500					275,500
	TOTAL DIRECT	275,500					275,500

Estimate No.: 33740B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Estimate Totals

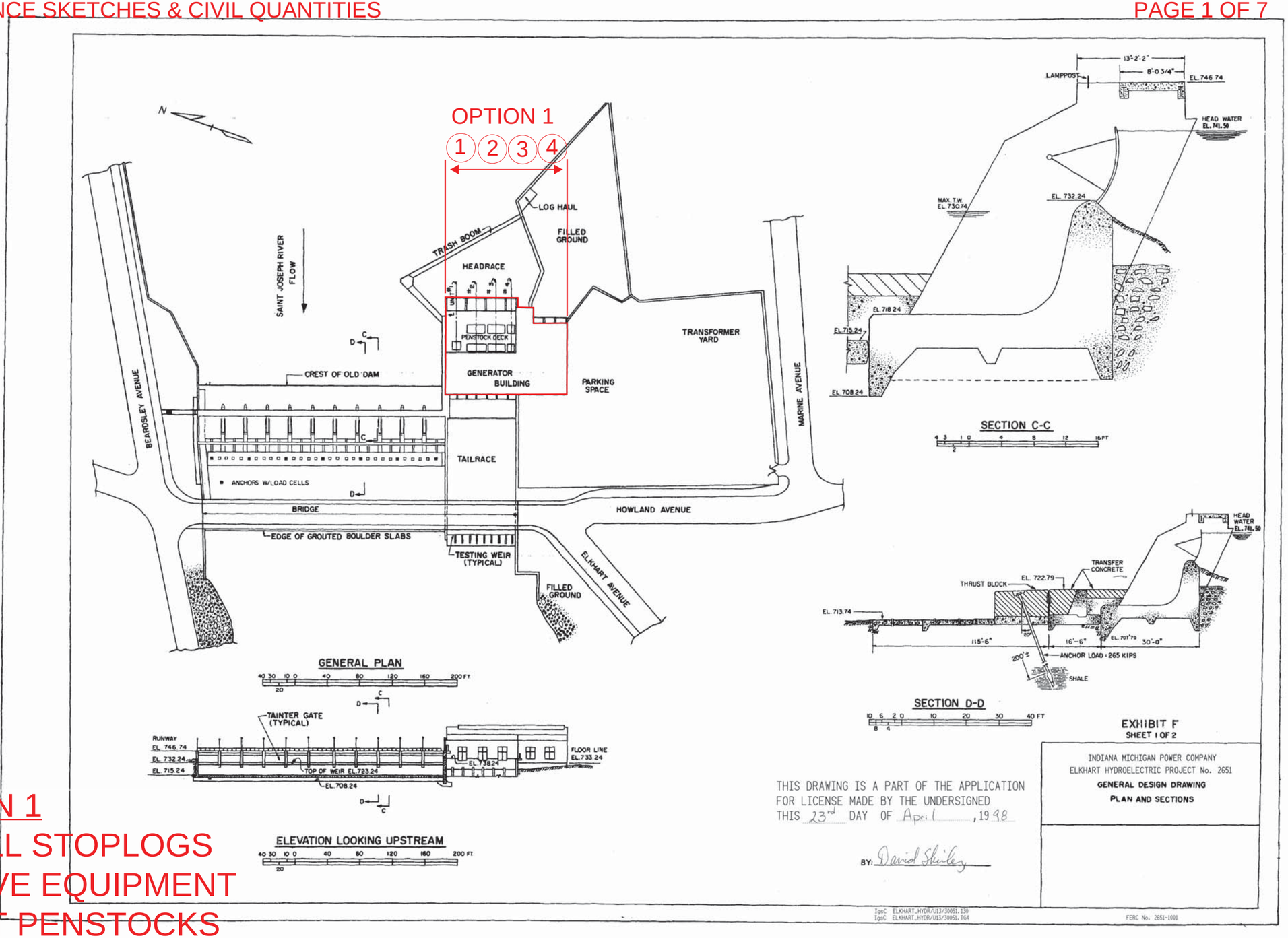
Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	275,500		
Scrap Value			
	275,500	**275,500**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		275,500	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	27,550		
93-8 EPC Fee			
	27,550	**303,050**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	55,100		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	5,510		
	60,610	**363,660**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		363,660	
		363,660	
Total		***363,660***	

Estimate No..: 33740B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - 4 KV CUBICLES	18-4 KV CUBICLES	134.00 CY		121.33 /MH			254,600	-	254,600
			ASBESTOS REMOVAL - 9 - CONTROL AND INSTRUMENT PANELS	9 PANELS 3'X1'X9'	9.00 CY		121.33 /MH			17,100	-	17,100
			ASBESTOS REMOVAL							275,500		275,500
			WHOLE PLANT DEMOLITION							275,500		275,500
			ASBESTOS ASBESTOS REMOVAL							275,500		275,500

EXHIBIT 4
Elkhart Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

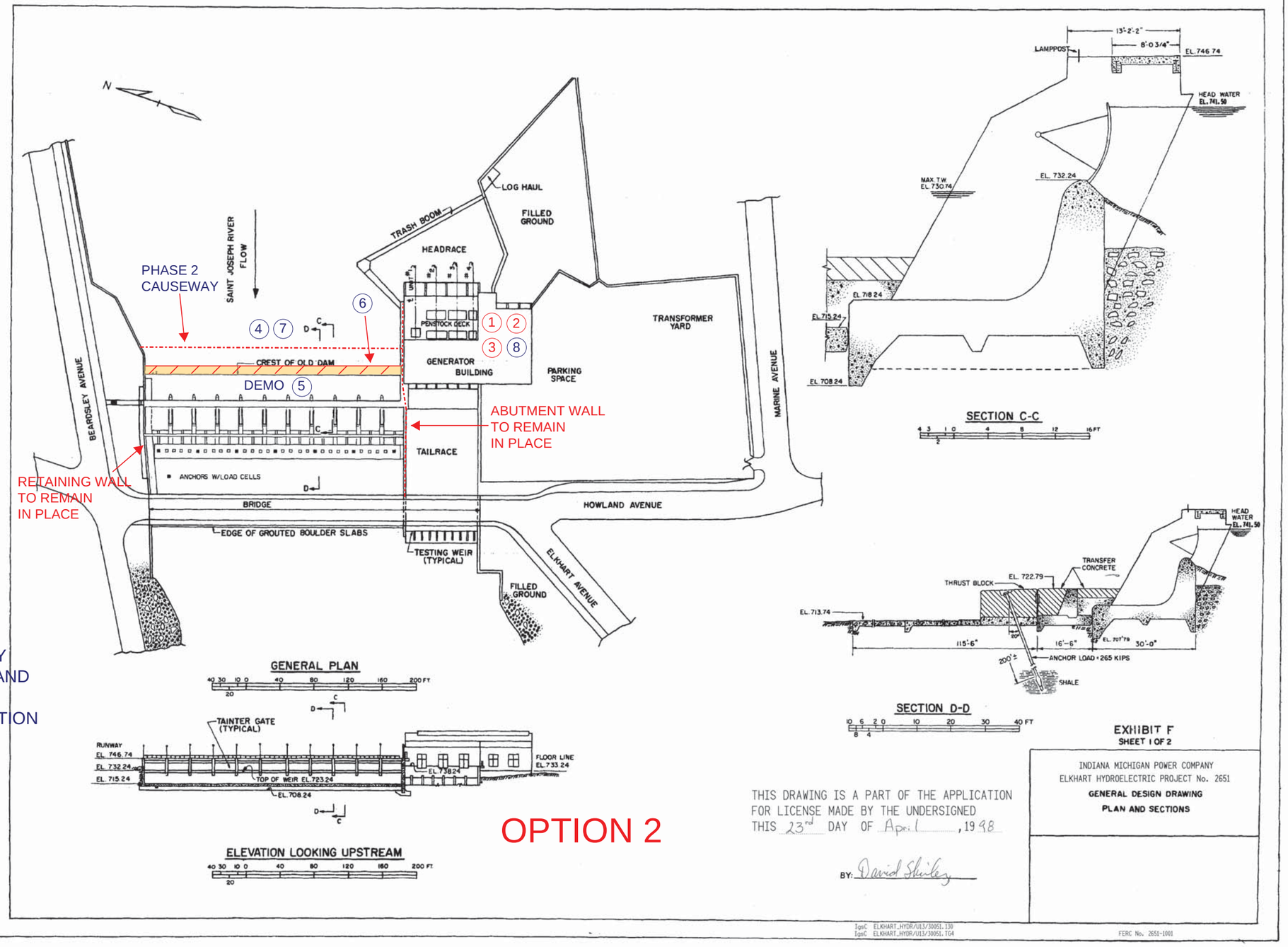


OPTION 1

1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. GROUT PENSTOCKS
4. REMOVE STOPLOGS

PHASE 1
1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. REMOVE STOPLOGS

PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO TAINTER GATES AND SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION
7. REMOVE CAUSEWAY
8. GROUT PENSTOCKS



OPTION 2

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 23rd DAY OF April, 1998

BY: David Shirley

EXHIBIT F
SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

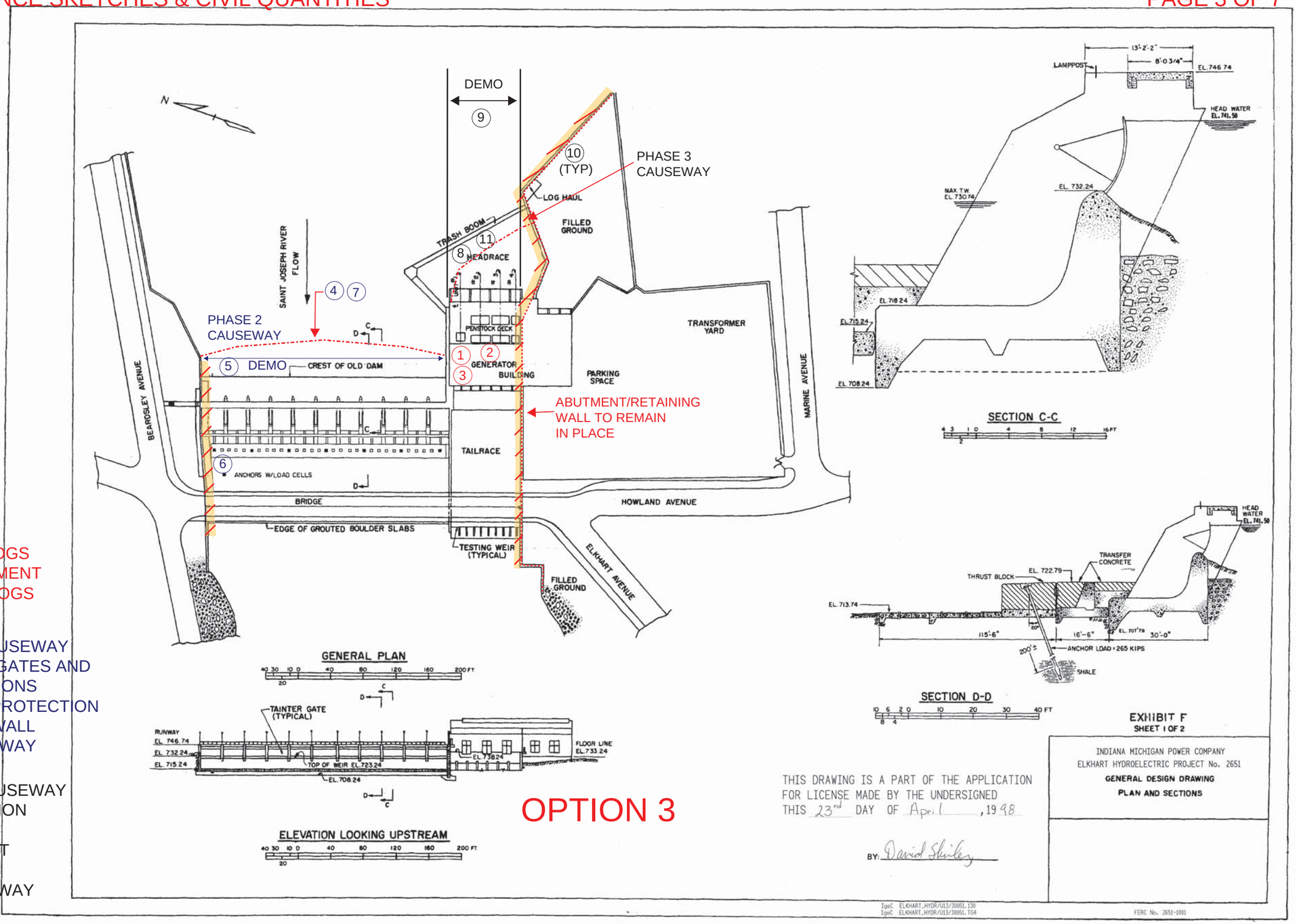
IgsC ELKHART_HYDR/UI3/30051.I30
IgsC ELKHART_HYDR/UI3/30051.TG4

FERC No. 2651-1001

PHASE 1
1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. REMOVE STOPLOGS

PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO TAINTER GATES AND SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION AT RETAIINING WALL
7. REMOVE CAUSEWAY

PHASE 3
8. CONSTRUCT CAUSEWAY
9. DEMO GENERATION BUILDING
10. PLACE RIPRAP AT ABUTMENT
11. REMOVE CAUSEWAY



OPTION 3

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 23rd DAY OF April, 1998

BY: David Shirley

EXHIBIT F
SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

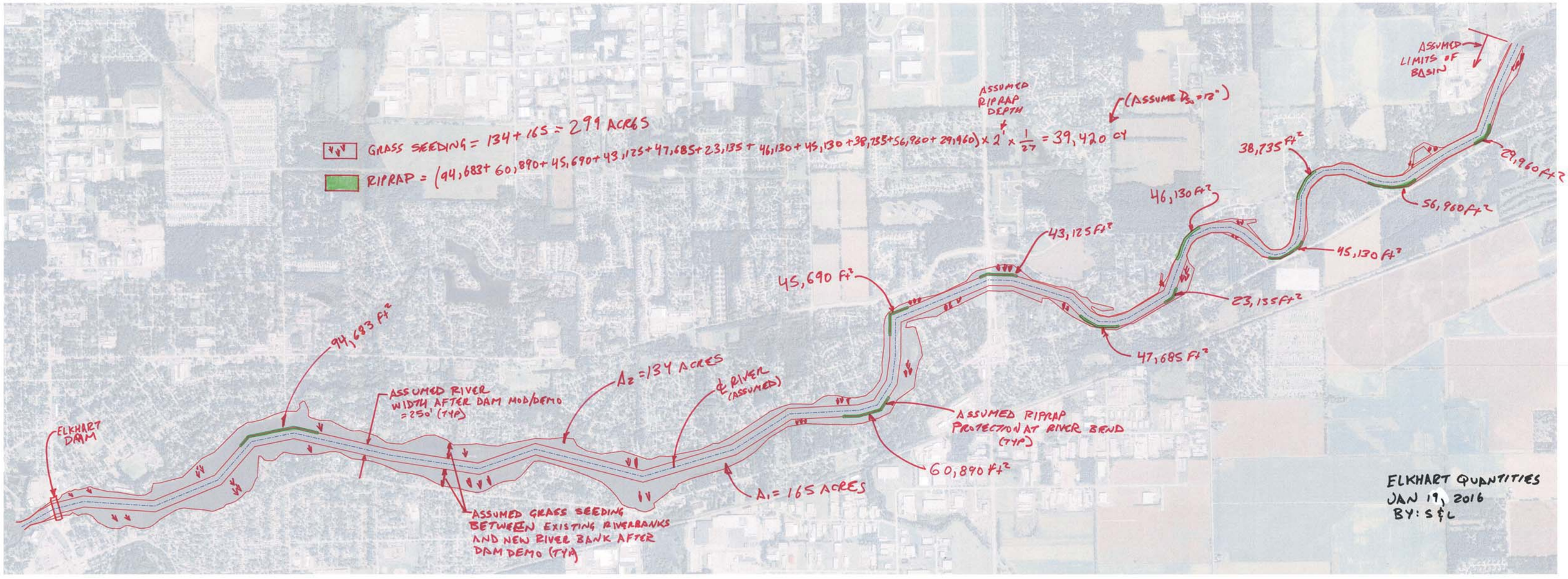
IgsC ELKHART_HYDR/UI3/30051.130
IgsC ELKHART_HYDR/UI3/30051.TG4

FERC No. 2651-1001

ELKHART			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	299	ACRE	
RIPRAP PROTECTION	39,420	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	115	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	115	CY	2 ft riprap protection @ D(50)=12"

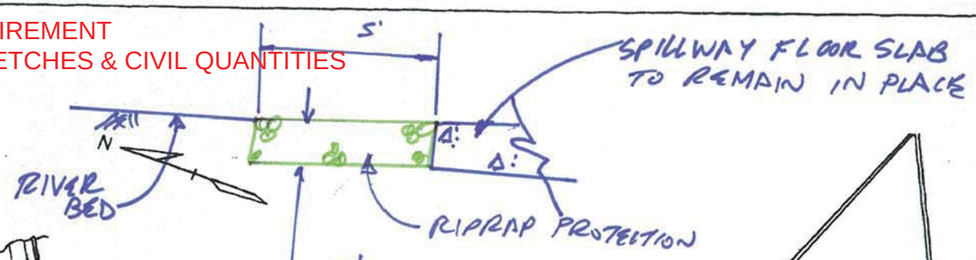
OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	290	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	39,420	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT DAM ABUTMENTS	395	CY	2 ft riprap protection @ D(50)=12"
EARTHWORK CUT AT DAM ABUTMENTS	330	CY	Riverbed removal for riprap placement

Note: Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg

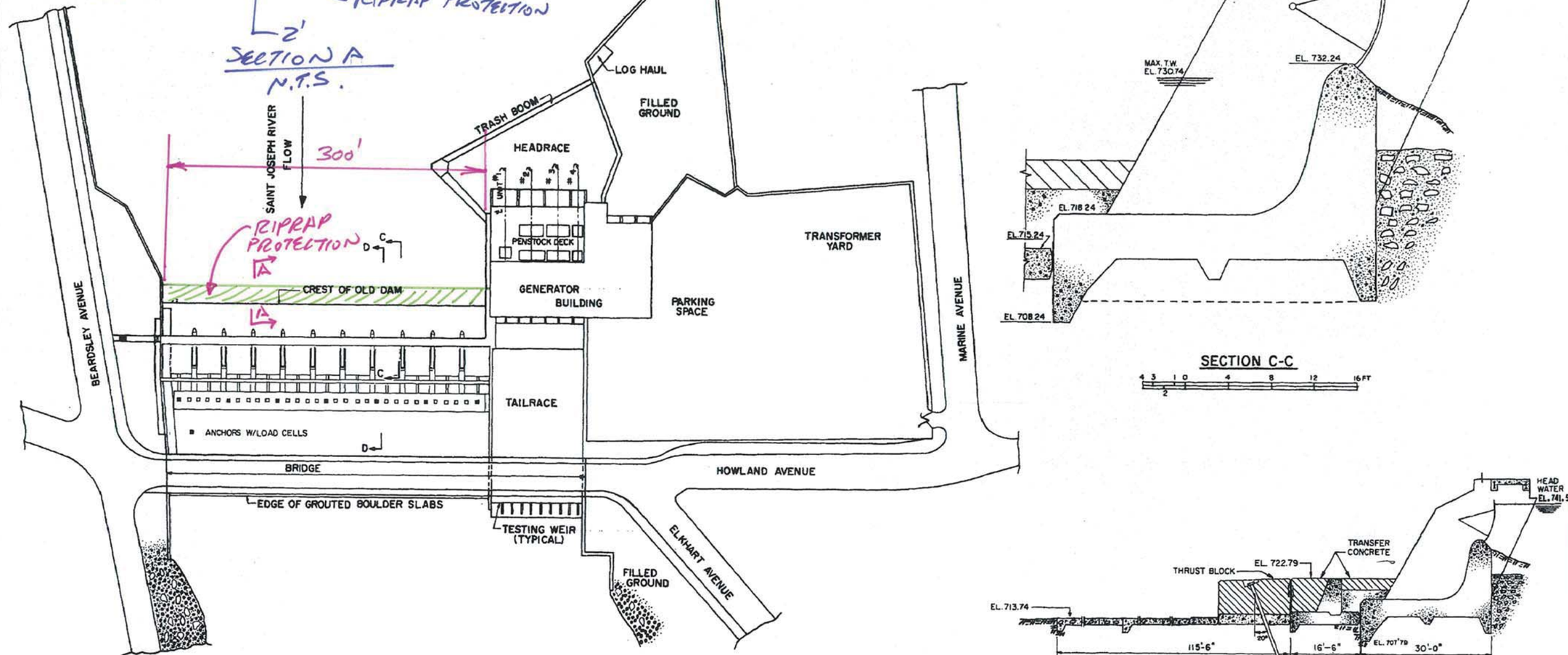

GRASS SEEDING = 134 + 165 = 299 ACRES
RIPRAP = (94,683 + 60,890 + 45,690 + 43,125 + 47,685 + 23,135 + 46,130 + 45,130 + 38,735 + 56,960 + 29,960) x 2' x 1/27 = 39,420 CY
ASSUMED RIPRAP DEPTH
(ASSUME R30 = 12')
ASSUMED LIMITS OF BASIN
38,735 Ft²
29,960 Ft²
46,130 Ft²
56,960 Ft²
43,125 Ft²
45,130 Ft²
45,690 Ft²
23,135 Ft²
47,685 Ft²
94,683 Ft²
ASSUMED RIVER WIDTH AFTER DAM MOD/DEMO = 250' (TYP)
A2 = 134 ACRES
℄ RIVER (ASSUMED)
ELKHART DAM
ASSUMED RIPRAP PROTECTION AT RIVER BEND (TYP)
60,890 Ft²
A1 = 165 ACRES
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVERBANKS AND NEW RIVER BANK AFTER DAM DEMO (TYP)
ELKHART QUANTITIES
JAN 19, 2016
BY: S&L
1000' 0 1000' 2000'
GRAPHIC SCALE

$V_{RIPRAP} = (2 \times 5)(300)\left(\frac{1}{27}\right) \simeq 115\ CY$

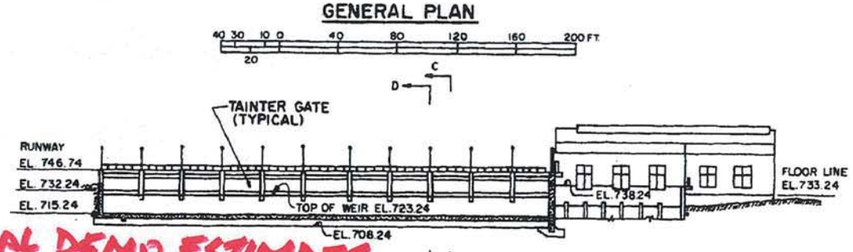
$V_{CUT} = V_{RIPRAP} \simeq 115\ CY$



SECTION A
N.T.S.



GENERAL PLAN



ELEVATION LOOKING UPSTREAM

SECTION C-C

SECTION D-D

EXHIBIT F
SHEET 1 OF 2

1¢/M CONCEPTUAL DEMO ESTIMATE
ELKHART RETIREMENT OPTION 2
CIVIL QUANTITIES

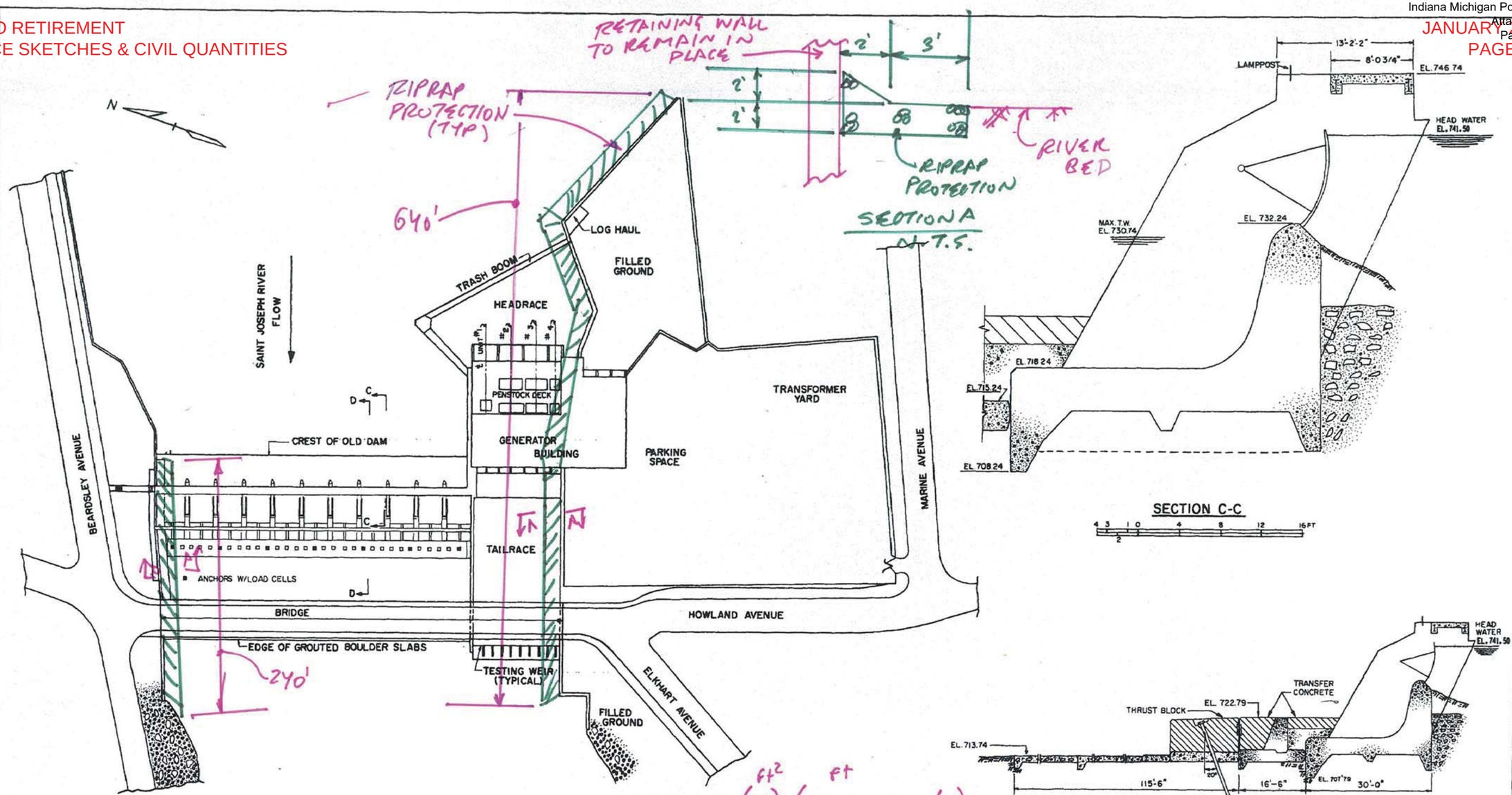
THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 23rd DAY OF April, 1998

BY: David Shirley

INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

IgsC ELKHART_HYDR/U13/30051.130
IgsC ELKHART_HYDR/U13/30051.TG4

FERC No. 2651-1001



$V_{RIPRAP} = (12)(640+240) \times \left(\frac{1}{27}\right) \approx 395\ CY$ (ft^2, ft)

$V_{CUT} = (10)(640+240)\left(\frac{1}{27}\right) \approx 330\ CY$

1ST CONCEPTUAL DEMO ESTIMATE
ELKHART RETIREMENT OPTION 3
CIVIL QUANTITIES

EXHIBIT F
SHEET 1 OF 2

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INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

IgsC ELKHART_HYDR/U13/30051.130
IgsC ELKHART_HYDR/U13/30051.TG4

FERC No. 2651-1001

Mottville Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Mottville Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	02/02/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan	All

Mottville Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

TABLE OF CONTENTS

1.0 INTRODUCTION

The Mottville Hydroelectric Plant located in the City of Mottville, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from right to left referenced facing downstream) an earth embankment right of the powerhouse, an integral intake and powerhouse, a gated reinforced concrete spillway and an earth embankment to the left of the spillway. An abandoned fish ladder, separate the powerhouse and spillway. The spillway is equipped with ten (10) tainter gates which regulate headwater. The combined intake-powerhouse is situated to the right of the spillway. The powerhouse contains four (4) vertical shaft operating Allis-Chalmers turbine generators. Each unit is rated at 0.42 MW and were installed in 1923.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Mottville Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33709B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$4,889,193
Scrap Value	($85,278)
Direct Cost Subtotal	$4,803,914
Indirect Cost	$489,000
Contingency Cost	$1,089,000
Escalation Cost	$0
Total Project Cost	$6,381,915

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$65,833
Scrap Value	($28,733)
Direct Cost Subtotal	$37,100
Indirect Cost	$4,000
Contingency Cost	$18,200
Escalation Cost	$0
Total Project Cost	$59,300

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$4,337,930
Scrap Value	($34,814)
Direct Cost Subtotal	$4,303,116
Indirect Cost	$438,000
Contingency Cost	$961,000
Escalation Cost	$0
Total Project Cost	$5,702,116

Asbestos Removal Conceptual Cost Estimate No. 33741B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $5,100. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Tuesday December 15, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Mottville Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of two (2) of the tainter gates after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Mottville Plant Drawings: One-Line Diagrams, No. E-1000, Revision 16 and No. 14-12001-2, 12/17/91.

5.2 American Electric Power, Supporting Technical Information Document, Mottville Hydroelectric Project, September, 2007.

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EXHIBIT 1
Mottville Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Mottville Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33709B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 65,833	$ 4,337,930	$ 4,889,193
Scrap Value	$ (28,733)	$ (34,814)	$ (85,278)
Direct Cost Subtotal	$ 37,100	$ 4,303,116	$ 4,803,914
Indirect Cost	$ 4,000	$ 438,000	$ 489,000
Contingency Cost	$ 18,200	$ 961,000	$ 1,089,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 59,300	$ 5,702,116	$ 6,381,915

EXHIBIT 2
Mottville Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33709B

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33709B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33709B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(28,733)	11,020	587	54,813	37,100
ACCOUNT B	DEMOLITION ACCOUNT B	506,220	(6,081)	2,248,154	20,696	1,517,723	4,266,016
ACCOUNT C	DEMOLITION ACCOUNT C	135,460	(50,464)		4,820	415,803	500,798
	TOTAL DIRECT	641,680	(85,278)	2,259,174	26,103	1,988,339	4,803,915

Estimate No.: 33709B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	1,988,339		26,103
Material	2,259,174		
Subcontract	641,680		
Scrap Value	(85,278)		
	4,803,915	**4,803,915**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		4,803,915	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	489,000		
93-8 EPC Fee			
	489,000	**5,292,915**	
Contingency:			
94-1 Contingency on Material	452,000		
94-2 Contingency on Labor	398,000		
94-3 Contingency on Sub.	128,000		
94-6 Contingency on Scrap	13,000		
94-5 Contingency on Indirect	98,000		
	1,089,000	**6,381,915**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		6,381,915	
		6,381,915	
Total		***6,381,915***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .4 MW GENERATOR	4 GENERATORS AT 7500# EA	15.00 TN	149	83.69 /MH	12,429		-		12,429
			DEMO TURBINE AND GEARS	4 TUBINES & GEARS AT 11000# EA	22.00 TN	218	83.69 /MH	18,230		-		18,230
			TURBINE ROOM 15 TON BRIDGE CRANE	15 TON BRIDGE CRANE	11.30 TN	112	122.82 /MH	13,741		-		13,741
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	122.82 /MH	5,472		-		5,472
			MECHANICAL EQUIPMENT			523		49,872				49,872
			WHOLE PLANT DEMOLITION			523		49,872				49,872
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	.4 MW GENERATOR, 4 @4,125# EA	-8.25 TN		77.78 /MH		-	-	(974)	(974)
			MIXED STEEL	4 TUBINES & GEARS AT 11000# EA	-22.00 TN		77.78 /MH		-	-	(2,598)	(2,598)
			MIXED STEEL	TURBINE ROOM 15 TON BRIDGE CRANE	-11.30 TN		77.78 /MH		-	-	(1,334)	(1,334)
			MIXED STEEL	BAR RACKS	-20.00 TN		77.78 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL								(7,268)	(7,268)
		18.30.00	COPPER									
			COPPER	4 GENERATORS AT 3375# EA	-6.75 TN		77.78 /MH		-	-	(21,465)	(21,465)
			COPPER								(21,465)	(21,465)
			SCRAP VALUE								(28,733)	(28,733)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	116.00 CY	64	77.44 /MH	4,941	11,020	-	-	15,961
			Concrete			64		4,941	11,020			15,961
			CONCRETE			64		4,941	11,020			15,961
			ACCOUNT A DEMOLITION ACCOUNT A			587		54,813	11,020		(28,733)	37,100
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	FISH LADDER	113.00 CY	140	85.21 /MH	11,917		-	-	11,917
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - OGEE SECTION	245.00 CY	303	85.21 /MH	25,837		-	-	25,837
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - BUTTRESSES	301.00 CY	373	85.21 /MH	31,743		-	-	31,743
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - WEIR AND STILLING POND	255.00 CY	316	85.21 /MH	26,892		-	-	26,892
			CONCRETE			1,131		96,389				96,389
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	TAINTER GATES STRUCTURE AND WALKWAY	50.00 TN	56	77.78 /MH	4,347		-	-	4,347
			STEEL			56		4,347				4,347
		10.31.00	MECHANICAL EQUIPMENT									
			60 KW PROPANE ELECTRIC GENERATOR	60 KW PROPANE ELECTRIC GENERATOR	1.50 TN	3	122.82 /MH	410		-		410
			MECHANICAL EQUIPMENT			3		410				410
			WHOLE PLANT DEMOLITION			1,190		101,146				101,146
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	60 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		77.78 /MH		-	-	(177)	(177)
			MIXED STEEL	TAINTER GATES & WALKWAY	-50.00 TN		77.78 /MH		-	-	(5,904)	(5,904)
			MIXED STEEL								(6,081)	(6,081)
			SCRAP VALUE								(6,081)	(6,081)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	90.00 CY	17	84.18 /MH	1,417		-	-	1,417
			EXCAVATION			17		1,417				1,417
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	NEW STONE REQD IF CAUSEWAY STONE IS REUSED (46850-3408)	43,444.00 CY	14,190	71.48 /MH	1,014,287	1,776,860	-	-	2,791,146
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS	3,408.00 CY	1,113	71.48 /MH	79,567	139,387	-	-	218,954
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RELOCATE CAUSE WAY STONE FOR RIVER	3,408.00 CY	1,113	71.48 /MH	79,567		-	-	79,567

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	BEND PR0TECTION	3,408.00 CY	1,113	71.48 /MH	79,567		-	-	79,567
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT FLOOR SLABS TO REMAIN IN PLACE	90.00 CY	29	71.48 /MH	2,101	3,681	-	-	5,782
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT ABUTMENTS TO REMAIN IN PLACE (240-90)	150.00 CY	49	71.48 /MH	3,502	6,135	-	-	9,637
			Erosion and Sedimentation Control			16,494		1,179,023	1,926,063			3,105,086
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		211.00 AC	2,994	78.86 /MH	236,138	322,092	-	-	558,229
			LANDSCAPING			2,994		236,138	322,092			558,229
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	2,301.00 CY		187.65 /MH			92,040	-	92,040
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (4602+2301)	6,903.00 CY		187.65 /MH			414,180	-	414,180
			Soil Remediation							506,220		506,220
			CIVIL WORK			19,506		1,416,577	2,248,154	506,220		4,170,952
			ACCOUNT B DEMOLITION ACCOUNT B			20,696		1,517,723	2,248,154	506,220	(6,081)	4,266,016
ACCOUNT C			DEMOLITION ACCOUNT C									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	DOWNSTREAM APRON	288.00 CY	356	85.21 /MH	30,372		-	-	30,372
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE -	1,800.00 CY	2,228	85.21 /MH	189,824		-	-	189,824
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE - TAILRACE APRON	200.00 CY	248	85.21 /MH	21,092		-	-	21,092
			CONCRETE			2,832		241,288				241,288
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	65.00 TN	73	77.78 /MH	5,651		-	-	5,651
			STEEL			73		5,651				5,651
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	132.5'x28'x70' TALL	259,700.00 CF	1,114	89.78 /MH	100,035		-	-	100,035
			ARCHITECTURAL			1,114		100,035				100,035
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO PENSTOCKS	4 PENSTOCKS AT 9,300# EA	70.80 TN	701	83.69 /MH	58,666		-		58,666
			STOP LOGS	4 AT 5 TONS EACH	20.00 TN	45	122.82 /MH	5,472		-		5,472
			MECHANICAL EQUIPMENT			746		64,138				64,138
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2500 KVA (STEEL)	6.65 TN	20	82.70 /MH	1,617		-	-	1,617
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2500 KVA (CU)	1.44 TN	4	82.70 /MH	350		-	-	350
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	82.70 /MH	1,215		-	-	1,215
			ELECTRICAL EQUIPMENT			38		3,182				3,182
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS	0	122.82 /MH	14		-	10,000	10,014
			WASTE			0		14			10,000	10,014
			WHOLE PLANT DEMOLITION			4,803		414,307			10,000	424,307
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	4 PENSTOCKS AT 9,300# EA	-4.60 TN		77.78 /MH		-	-	(543)	(543)
			MIXED STEEL	STOP LOGS	-20.00 TN		77.78 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	GENERATOR HOUSE	-65.00 TN		77.78 /MH		-	-	(7,675)	(7,675)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-6.65 TN		77.78 /MH		-	-	(785)	(785)
			MIXED STEEL								(11,365)	(11,365)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		77.78 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-4.00 TN		77.78 /MH		-	-	(12,720)	(12,720)
			COPPER	GENERATOR BUS TRANSFORMERS	-1.44 TN		77.78 /MH		-	-	(4,579)	(4,579)
			COPPER								(49,099)	(49,099)
			SCRAP VALUE								(60,464)	(60,464)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR DAM ABUTMENTS	100.00 CY	19	84.18 /MH	1,574		-	-	1,574
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP CREDIT (85-90)	-5.00 CY	-1	84.18 /MH	(79)		-	-	(79)
			EXCAVATION			18		1,496				1,496
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING DELTA (2917-2301)	616.00 CY		187.65 /MH			24,640	-	24,640
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX DELTA (8750-6903)	1,847.00 CY		187.65 /MH			110,820	-	110,820
			Soil Remediation							135,460		135,460
			CIVIL WORK			18		1,496		135,460		136,956
			ACCOUNT C DEMOLITION ACCOUNT C			**4,820**		**415,803**		**135,460**	**(50,464)**	**500,798**

EXHIBIT 3
Mottville Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33741B

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33741B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33741B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	3,800					3,800
	TOTAL DIRECT	3,800					3,800

Estimate No.: 33741B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	3,800		
Scrap Value			
	3,800	**3,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		3,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	400		
93-8 EPC Fee			
	400	**4,200**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	800		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	100		
	900	**5,100**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		5,100	
		5,100	
Total		***5,100***	

Estimate No..: 33741B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

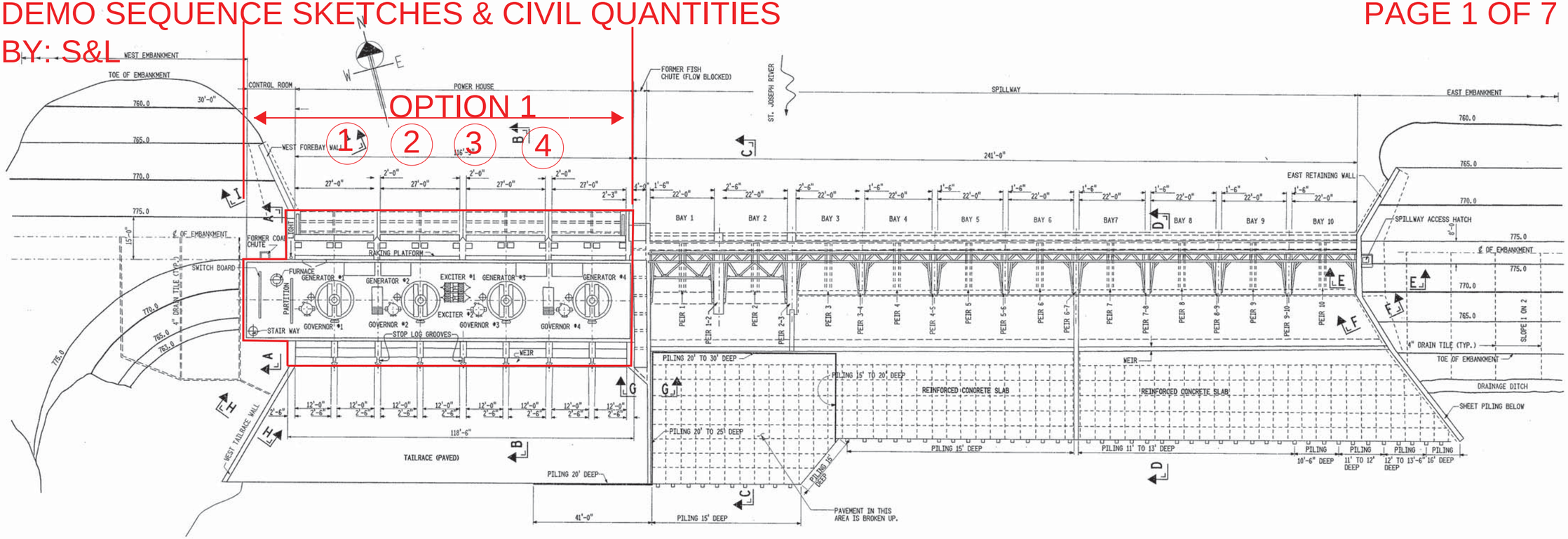
AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL							3,800		3,800
			WHOLE PLANT DEMOLITION							3,800		3,800
			ASBESTOS ASBESTOS REMOVAL							3,800		3,800

EXHIBIT 4
Mottville Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016



PLAN

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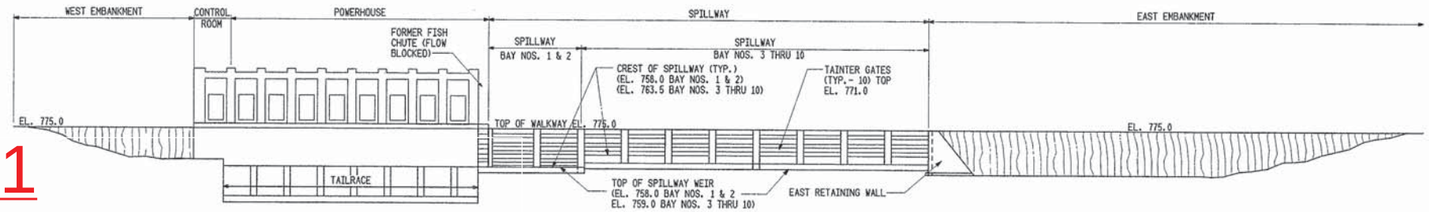


ELEVATION LOOKING UPSTREAM

30 20 10 0 30 FEET

OPTION 1

1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. GROUT DRAFT TUBES
4. REMOVE STOPLOGS

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

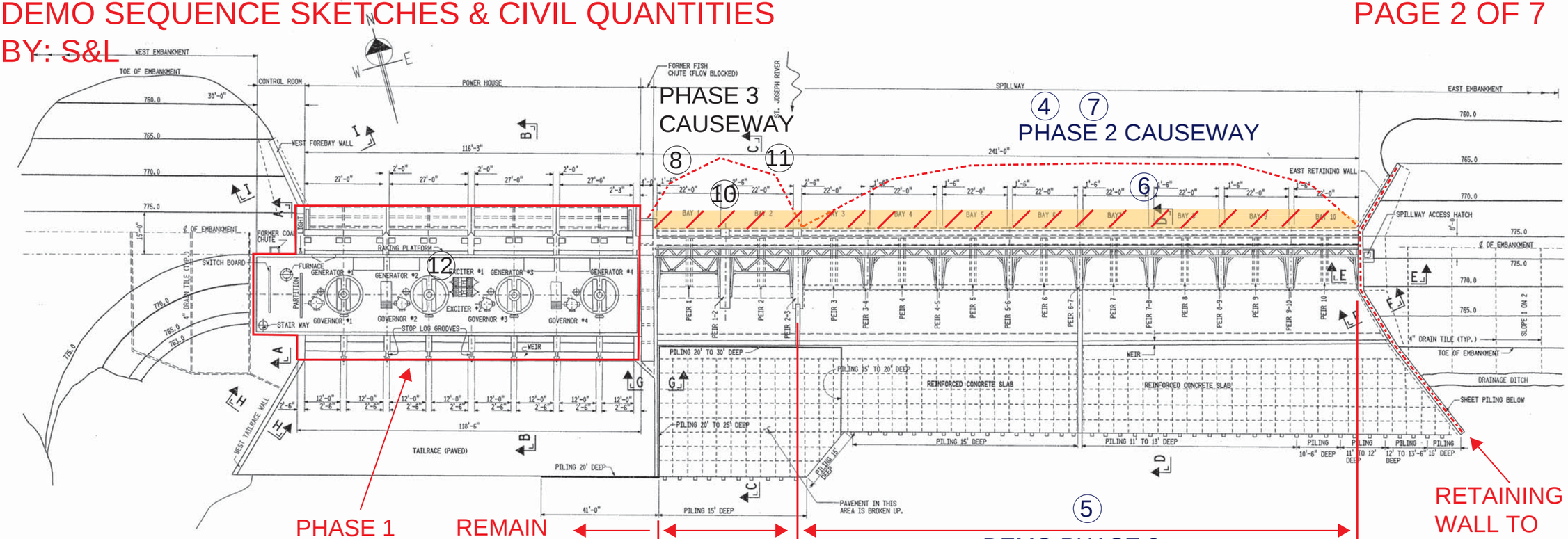
THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

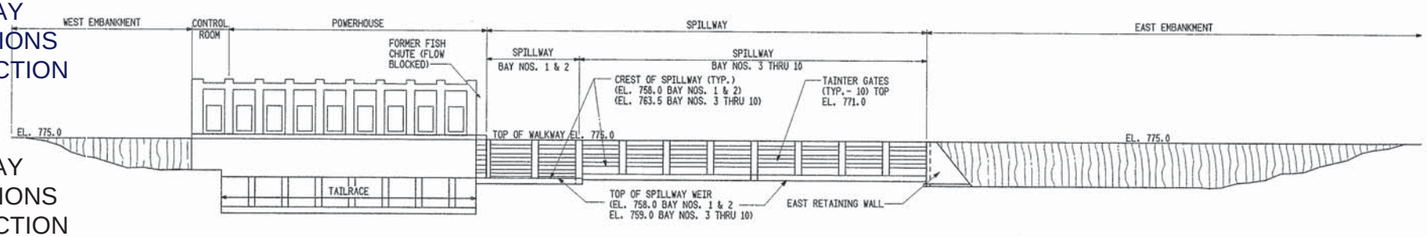
JANUARY 25, 2016
PAGE 2 OF 7



PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION
⑦ REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO SPILLWAY SECTIONS
⑩ PLACE RIPRAP PROTECTION
⑪ REMOVE CAUSEWAY
⑫ GROUT DRAFT TUBES



OPTION 2

ELEVATION LOOKING UPSTREAM
30 20 10 0 30 FEET

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

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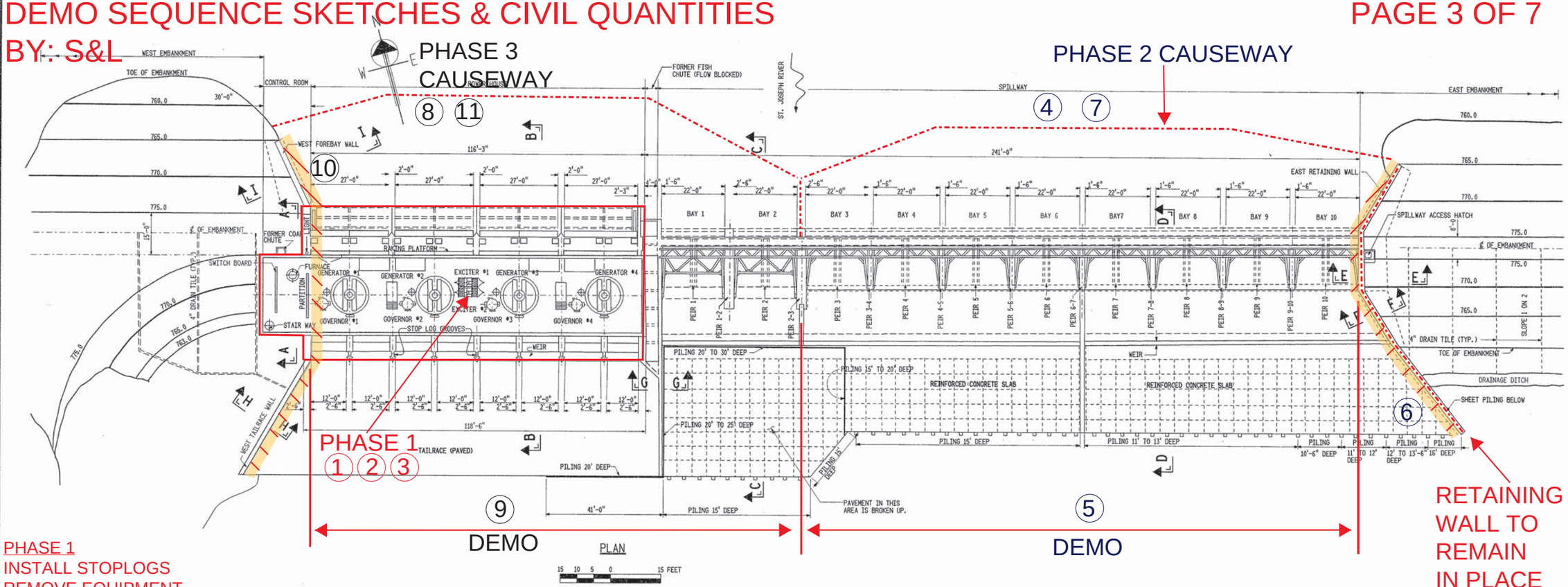
DATE: _____

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

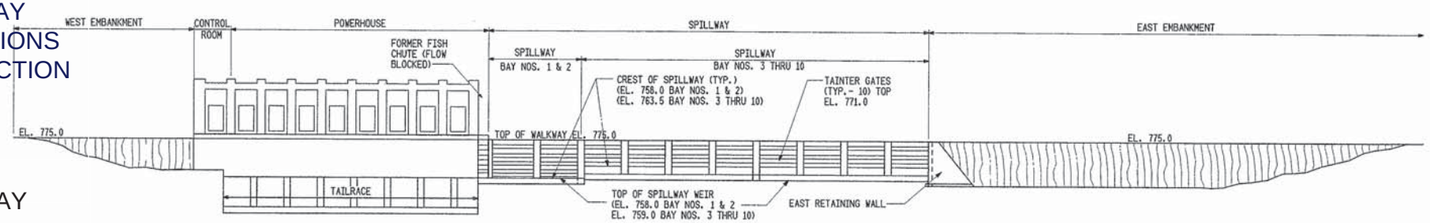
JANUARY 25, 2016
PAGE 3 OF 7



PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑦ REMOVE SPILLWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO GENERATION BUILDING AND SPILLWAY SECTIONS
⑩ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑪ REMOVE CAUSEWAY



OPTION 3

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

MOTTVILLE			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	211	ACRE	
RIPRAP PROTECTION	46,850	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT FLOOR SLAB TO REMAIN IN PLACE	90	CY	
RIVERBED EXCAVATION FOR RIPRAP	90	CY	TO BE REPLACED BY RIPRAP

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	211	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	46,850	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT DAM ABUTMENTS	100	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	85	CY	TO BE REPLACED BY RIPRAP

Note:

Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg

GRASS SEEDING = (107 + 104) = 211 ACRES

RIPRAP = {68,875 + 95,237 + 71,580 + 45,300 + 74,790 + 78,165 + 71,600 + 37,590 + 67,180 + 32,155} ft² × 2 × 1/27
= 46,850 CY

32,155 ft²

ASSUMED BASIN LIMITS

37,590 ft²

67,180 ft²

78,165 ft²

71,600 ft²

45,300 ft²

74,790 ft²

ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DEMO (TYP)

ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 200' (TYP)

A_1 = 107 ACRES

71,580 ft²

℄ RIVER (ASSUMED)

68,875 ft²

95,237 ft²

ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)

A_2 = 104 ACRES

MOTTVILLE DAM

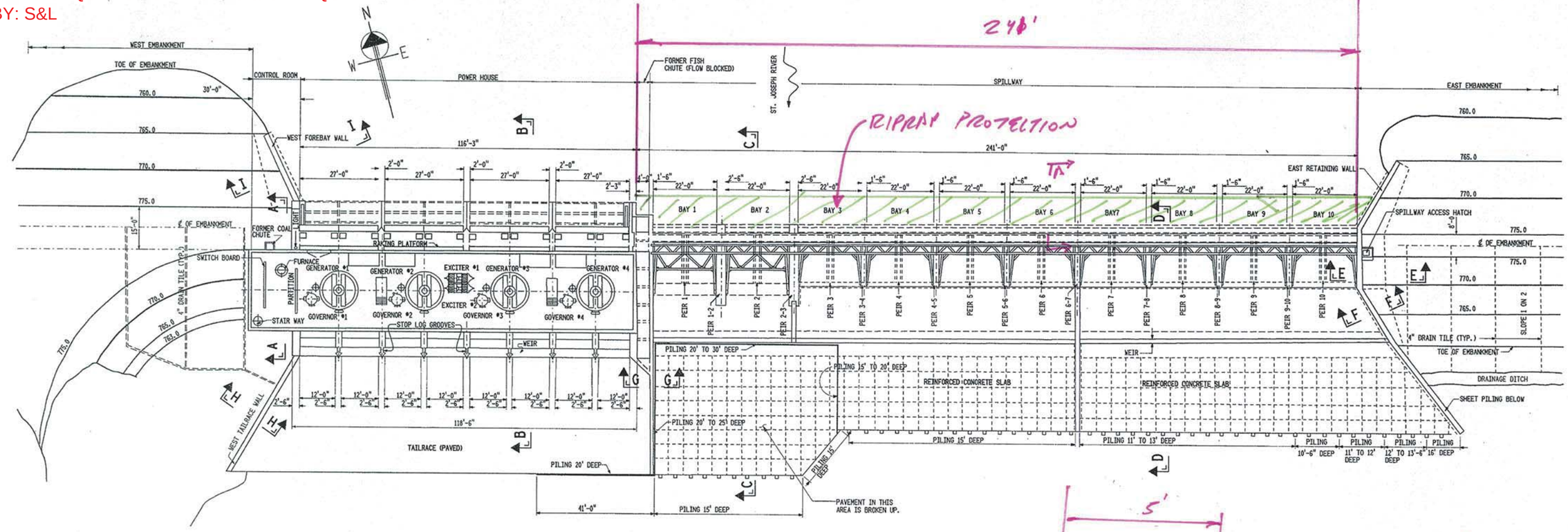
MOTTVILLE QUANTITIES
JAN 19, 2016
BY: S&L

N

500' 0' 500' 1000'
GRAPHIC SCALE

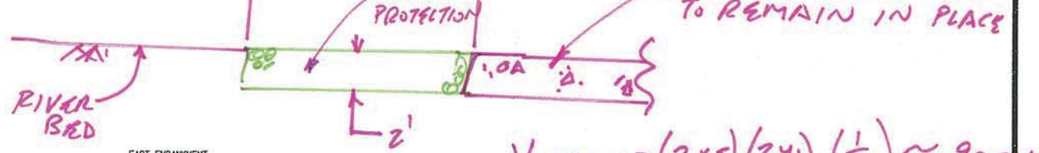
MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 6 OF 7



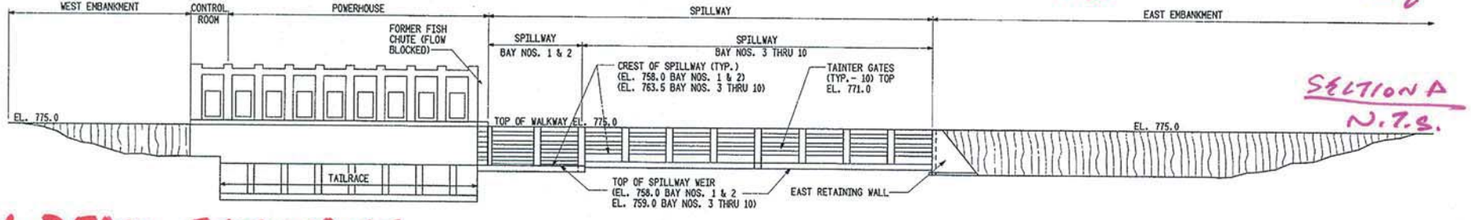
PLAN

15 10 5 0 15 FEET



$V_{RIPRAP} = (2 \times 5)(241)\left(\frac{1}{27}\right) \approx 90\ CY$

$V_{CUT} = V_{RIPRAP} = 90\ CY$



SECTION A
N.T.S.

ELEVATION LOOKING UPSTREAM

30 20 10 0 30 FEET

ITEM CONCEPTUAL DEMO ESTIMATE
MOTTVILLE RETIREMENT OPTION 2
CIVIL QUANTITIES

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

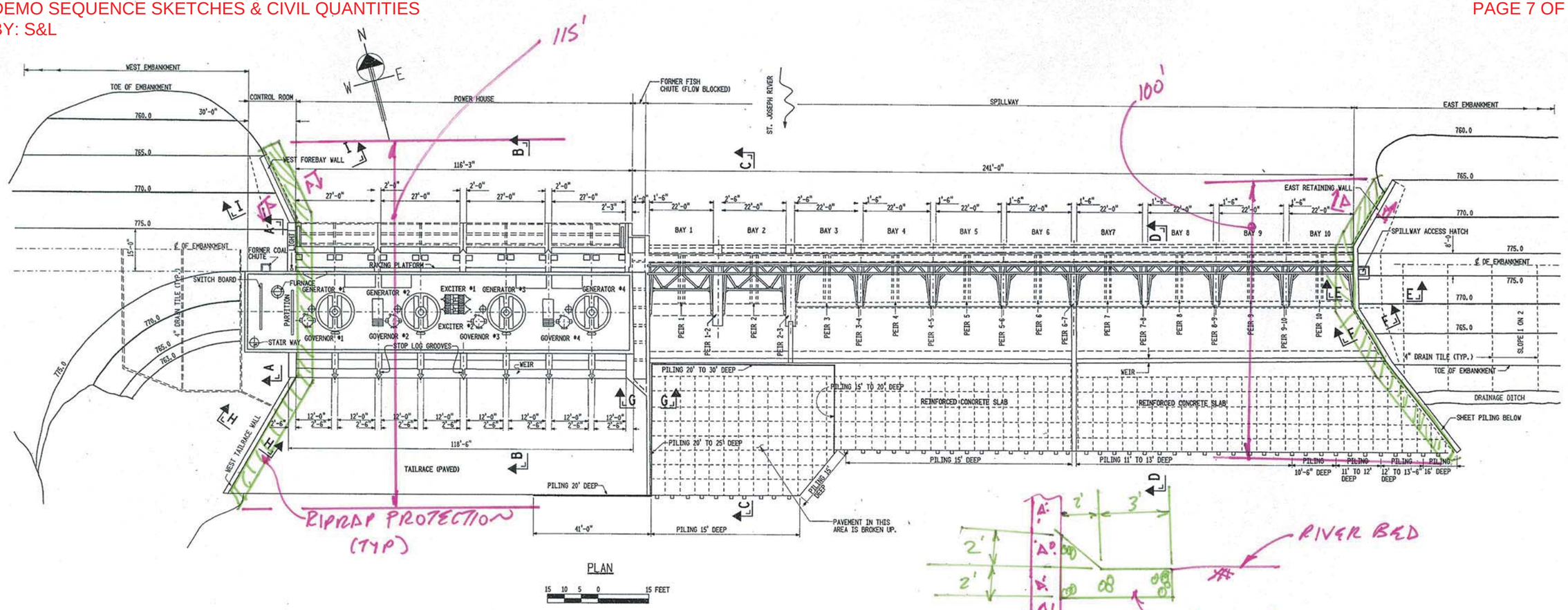
THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

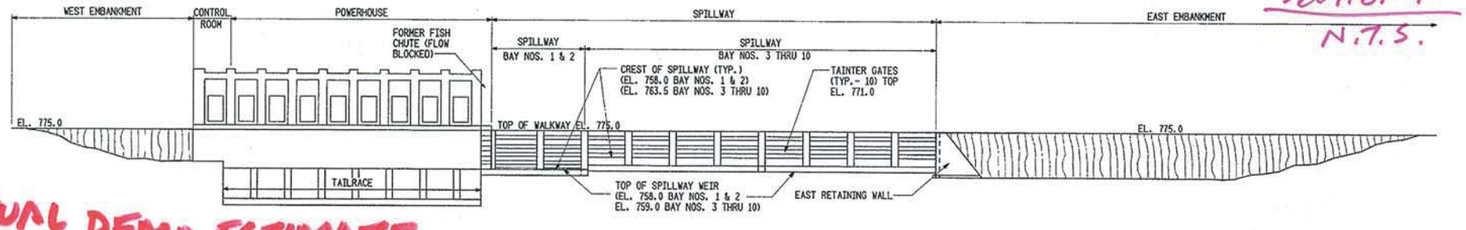
MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 7 OF 7



PLAN

15 10 5 0 15 FEET



ELEVATION LOOKING UPSTREAM

30 20 10 0 30 FEET

SECTION A
N.T.S.

$V_{RIPRAP} = (12ft^2)(115' + 110')\left(\frac{1}{27}\right) = 100\ CY$

$V_{CUT} = (2 \times 5)(115' + 110')\left(\frac{1}{27}\right) \approx 85\ CY$

I&M CONCEPTUAL DEMO ESTIMATE
MOTTVILLE RETIREMENT OPTION 3
CIVIL QUANTITIES

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

Twin Branch Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

AEP AMERICAN® ELECTRIC POWER

Twin Branch Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	02/02/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan TJMeehan	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Twin Branch Hydroelectric Plant located near the City of South Bend, Indiana is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from right to left referenced facing downstream) an embankment section referred to as the "saddle dike", the old steam plant intake structure, the right abutment embankment, the spillway, the powerhouse and the left abutment embankment. The spillway is a concrete-capped timber crib structure and consists of two flashboard rollway sections (on either end of the spillway) and a central tainter gate section consisting of seven (7) gates. The powerhouse is located to the left of the south rollway section. The powerhouse contains eight (8) operating vertical shaft Flygt Kaplan turbines equipped with Siemens generators rated at 0.6 MW each. Four (4) of the units were installed in 1989 and four (4) in 1992. There are two (2) in place, non-operating generators inside the powerhouse which have been abandoned.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Twin Branch Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33710B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$10,506,420
Scrap Value	($166,151)
Direct Cost Subtotal	$10,340,269
Indirect Cost	$1,051,000
Contingency Cost	$2,337,000
Escalation Cost	$0
Total Project Cost	$13,728,269

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$127,208
Scrap Value	($86,961)
Direct Cost Subtotal	$40,247
Indirect Cost	$5,000
Contingency Cost	$40,000
Escalation Cost	$0
Total Project Cost	$85,247

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$8,260,082
Scrap Value	($157,447)
Direct Cost Subtotal	$8,102,635
Indirect Cost	$824,000
Contingency Cost	$1,842,000
Escalation Cost	$0
Total Project Cost	$10,768,635

Asbestos Removal Conceptual Cost Estimate No. 33742B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $49,330. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The old steam plan intake structure serves as a screen house/intake for a nearby industrial building and will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not

complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Wednesday December 16, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Twin Branch Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost

estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of two (2) of the tainter gates after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are a number of devices in the powerhouse mounted on transite (asbestos) panels and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Twin Branch Plant Drawings: One-Line Diagrams, No. E-1000, Revision 16 and No. 16-12001-2, 2/7/91.

5.2 Findlay Engineering, Inc., Supporting Technical Information Document, Twin Branch Hydroelectric Project, August, 2005.

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EXHIBIT 1
Twin Branch Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Twin Branch Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33710B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 127,208	$ 8,260,082	$ 10,506,420
Scrap Value	$ (86,961)	$ (157,447)	$ (166,151)
Direct Cost Subtotal	$ 40,247	$ 8,102,635	$ 10,340,269
Indirect Cost	$ 5,000	$ 824,000	$ 1,051,000
Contingency Cost	$ 40,000	$ 1,842,000	$ 2,337,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 85,247	$ 10,768,635	$ 13,728,269

EXHIBIT 2
Twin Branch Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33710B

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	TWIN BRANCH
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33710B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33710B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(86,961)		1,464	127,208	40,247
ACCOUNT B	DEMOLITION ACCOUNT B	1,419,180	(70,486)	3,177,934	45,622	3,535,760	8,062,388
ACCOUNT C	DEMOLITION ACCOUNT C	874,760	(8,704)		15,233	1,371,578	2,237,634
	TOTAL DIRECT	2,293,940	(166,151)	3,177,934	62,319	5,034,546	10,340,269

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	5,034,546		62,319
Material	3,177,934		
Subcontract	2,293,940		
Scrap Value	(166,151)		
	10,340,269	**10,340,269**	
Other Direct & Construction Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		10,340,269	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	1,051,000		
93-8 EPC Fee			
	1,051,000	**11,391,269**	
Contingency:			
94-1 Contingency on Material	636,000		
94-2 Contingency on Labor	1,007,000		
94-3 Contingency on Sub.	459,000		
94-6 Contingency on Scrap	25,000		
94-5 Contingency on Indirect	210,000		
	2,337,000	**13,728,269**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		13,728,269	
Total		***13,728,269***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .6 MW FLYGT GENERATOR	8 GENERATORS AT 9500# EA	38.00 TN	418	85.53 /MH	35,755		-		35,755
			DEMO FLYGT TURBINE AND GEARS	8 GENERATORS AT 14000# EA	56.00 TN	616	85.53 /MH	52,692		-		52,692
			DEMO HOIZONTAL CAMELBACK GENERATOR	2 GENERATORS AT 14000# EA	14.00 TN	154	85.53 /MH	13,173		-		13,173
			GENERATOR ROOM 20 TON TRAVELING CRANE	CRANE IS NOT MOTORIZED	15.00 TN	33	121.33 /MH	4,054		-		4,054
			BAR RACKS	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109
			MECHANICAL EQUIPMENT			1,288		113,783				113,783
			WHOLE PLANT DEMOLITION			1,288		113,783				113,783
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	.6 MW FLYGT GENERATOR, 8 @5,225# EA	-20.90 TN		79.62 /MH		-	-	(2,468)	(2,468)
			MIXED STEEL	DEMO FLYGT TURBINE AND GEARS	-56.00 TN		79.62 /MH		-	-	(6,612)	(6,612)
			MIXED STEEL	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 4.2 TN EA	-14.00 TN		79.62 /MH		-	-	(1,653)	(1,653)
			MIXED STEEL	GENERATOR ROOM 20 TON TRAVELING CRANE	-15.00 TN		79.62 /MH		-	-	(1,771)	(1,771)
			MIXED STEEL	BAR RACKS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL								(16,047)	(16,047)
		18.30.00	COPPER									
			COPPER	12 - .6 MW FLYGT GENERATOR 8@ 4,275 LB EA	-17.10 TN		79.62 /MH		-	-	(54,378)	(54,378)
			COPPER	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 2.6 TN EA	-5.20 TN		79.62 /MH		-	-	(16,536)	(16,536)
			COPPER								(70,914)	(70,914)
			SCRAP VALUE								(86,961)	(86,961)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	INSTALL COVER PLATES IN TURBINE BAY TO PREVENT BYPASS FLOW	1.00 LT	176	76.27 /MH	13,425		-	-	13,425
			Concrete			176		13,425				13,425
			CONCRETE			176		13,425				13,425
			ACCOUNT A DEMOLITION ACCOUNT A			1,464		127,208			(86,961)	40,247
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE SECTION: WEIR, , GATE WALLS & OGEE	1,522.00 CY	1,884	89.94 /MH	169,417		-	-	169,417
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - TIMBER CRIBING, INCL DISPOSAL	3,428.00 CY	3,394	89.94 /MH	305,262		68,560	-	373,822
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - CONCRETE OGIVE	457.00 CY	566	89.94 /MH	50,870		-	-	50,870
			EQUIPMENT/ BUILDING FOUNDATION	SOUTH ROLLWAY SECTION - TIMBER CRIBBING INCLUDES DISPOSAL;	3,360.00 CY	3,327	89.94 /MH	299,206		67,200	-	366,406
			CONCRETE			9,170		824,754		135,760		960,514
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	NORTH ROLLWAY WALKWAY	10.00 TN	11	79.62 /MH	890		-	-	890
			STRUCTURAL AND GIRT STEEL	SOUTH ROLLWAY WALKWAY	10.00 TN	11	79.62 /MH	890		-	-	890
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	89.00 TN	99	79.62 /MH	7,920		-	-	7,920
			STEEL			122		9,700				9,700
		10.31.00	MECHANICAL EQUIPMENT									
			60 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			TAINTER GATES	7 AT 5 TONS EACH	35.00 TN	78	121.33 /MH	9,460		-		9,460
			MECHANICAL EQUIPMENT			81		9,866				9,866
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 7500/9375 KVA (STEEL)	5.12 TN	15	80.14 /MH	1,206		-	-	1,206
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 6800/9068 KVA (CU)	4.62 TN	14	80.14 /MH	1,088		-	-	1,088
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			ELECTRICAL EQUIPMENT			43		3,472				3,472

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			WHOLE PLANT DEMOLITION			9,417		847,792		135,760		983,552
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	60 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	TAINTER GATES AND WALKWAY	-35.00 TN		79.62 /MH		-	-	(4,133)	(4,133)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-5.12 TN		79.62 /MH		-	-	(605)	(605)
			MIXED STEEL								(4,914)	(4,914)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-4.62 TN		79.62 /MH		-	-	(14,692)	(14,692)
			COPPER								(65,572)	(65,572)
			SCRAP VALUE								(70,486)	(70,486)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	170.00 CY	28	88.08 /MH	2,471		-	-	2,471
			Earthwork, Excavation			28		2,471				2,471
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	54560CY - 7333CY ASSUMING REUSE OF CAUSEWAY STONE	47,227.00 CY	20,834	74.10 /MH	1,543,793	1,931,584	-	-	3,475,377
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS INSTALLATION	7,333.00 CY	3,235	74.10 /MH	239,707	299,920	-	-	539,627
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	REUSE CAUSEWAY RIP RAP FOR BANK PROTECTION	7,333.00 CY	3,235	74.10 /MH	239,707		-	-	239,707
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT SPILLWAY FLOOR SLAB	170.00 CY	75	74.10 /MH	5,557		-	-	5,557
			Erosion and Sedimentation Control			27,379		2,028,764	2,231,504			4,260,268
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		620.00 AC	8,799	74.64 /MH	656,733	946,430	-	-	1,603,163
			LANDSCAPING			8,799		656,733	946,430			1,603,163
		21.65.00	Soil Remediation									
			REMOVAL OF SOIL - LOCALIZED	LIME ADDITIVE FOR DRYING	5,834.00 CY		196.64 /MH			233,360	-	233,360
			REMOVAL OF SOIL - LOCALIZED	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 7111+3556	17,501.00 CY		196.64 /MH			1,050,060	-	1,050,060
			Soil Remediation							1,283,420		1,283,420
			CIVIL WORK			36,205		2,687,968	3,177,934	1,283,420		7,149,322
			ACCOUNT B DEMOLITION ACCOUNT B			**45,622**		**3,535,760**	**3,177,934**	**1,419,180**	**(70,486)**	**8,062,388**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE: APRON	838.00 CY	1,037	89.94 /MH	93,279		-	-	93,279
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - CONCRETE BASE	488.00 CY	604	89.94 /MH	54,320		-	-	54,320
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - PLANK APRON, INCL DISPOSAL	480.00 CY	475	89.94 /MH	42,744		9,600	-	52,344
			EQUIPMENT/ BUILDING FOUNDATION	SOUTH ROLLWAY SECTION - CONCRETE BASE	471.00 CY	583	89.94 /MH	52,428		-	-	52,428
			EQUIPMENT/ BUILDING FOUNDATION	SOUTH ROLLWAY SECTION - PLANK APRON, INCL DISPOSAL	3,360.00 CY	3,327	89.94 /MH	299,206		67,200	-	366,406
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR ROOM	1,723.00 CY	2,132	89.94 /MH	191,790		-	-	191,790
			EQUIPMENT/ BUILDING FOUNDATION	TURBINE BAY	1,913.00 CY	2,368	89.94 /MH	212,940		-	-	212,940
			EQUIPMENT/ BUILDING FOUNDATION	DRAFT TUBE TUNNEL	2,266.00 CY	2,804	89.94 /MH	252,233		-	-	252,233
			CONCRETE			13,330		1,198,940		76,800		1,275,740
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	40'X181'	353,600.00 CF	1,517	89.81 /MH	136,250		-	-	136,250
			ARCHITECTURAL			1,517		136,250				136,250
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO CAMELBACK PENSTOCKS	2 GENERATORS AT 15 TN EA	30.00 TN	330	85.53 /MH	28,228		-		28,228
			STOP LOGS	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		10.31.00	MECHANICAL EQUIPMENT									
			TURBINE ROOM 15 TON GANTRY CRANE	INTAKE DECK	10.00 TN	22	121.33 /MH	2,703		-		2,703
			MECHANICAL EQUIPMENT			419		39,039				39,039
		10.86.00	WASTE									
			WASTE	MISC	1.00 LS		121.33 /MH			-	10,000	10,000
			WASTE								10,000	10,000
			WHOLE PLANT DEMOLITION			15,267		1,374,230		76,800	10,000	1,461,030
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO CAMELBACK PENSTOCKS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	STOP LOGS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	TURBINE ROOM 15 TON GANTRY CRANE	-10.00 TN		79.62 /MH		-	-	(1,181)	(1,181)
			MIXED STEEL	GENERATOR HOUSE	-88.40 TN		79.62 /MH		-	-	(10,438)	(10,438)
			MIXED STEEL								(18,704)	(18,704)
			SCRAP VALUE								(18,704)	(18,704)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP CREDIT (170-100_	-70.00 CY	-12	88.08 /MH	(1,017)		-	-	(1,017)
			Earthwork, Excavation			-12		(1,017)				(1,017)
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT RETAINING WALLS CEDIT(170-120)	-50.00 CY	-22	74.10 /MH	(1,634)		-	-	(1,634)
			Erosion and Sedimentation Control			-22		(1,634)				(1,634)
		21.65.00	Soil Remediation									
			REMOVAL OF SOIL - LOCALIZED	ADDITIONAL LIME ADDITIVE FOR DRYING ACCOUNT (9463-5834)	3,629.00 CY		196.64 /MH			145,160	-	145,160
			REMOVAL OF SOIL - LOCALIZED	ADDITIONAL LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (28389-17501))	10,880.00 CY		196.64 /MH			652,800	-	652,800
			Soil Remediation							797,960		797,960
			CIVIL WORK			-34		(2,652)		797,960		795,308
			ACCOUNT C DEMOLITION ACCOUNT C			**15,233**		**1,371,578**		**874,760**	**(8,704)**	**2,237,634**

EXHIBIT 3
Twin Branch Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33742B

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	TWIN BRANCH
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33742B
Estimate Class	Conceptual
Cost index	INSOU

Estimate No.: 33742B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	37,430					37,430
	TOTAL DIRECT	37,430					37,430

Estimate No.: 33742B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	37,430		
Scrap Value			
	37,430	**37,430**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		37,430	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	3,700		
93-8 EPC Fee			
	3,700	**41,130**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	7,500		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	700		
	8,200	**49,330**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		49,330	
Total		***49,330***	

Estimate No..: 33742B
Project No.: 13465-000
Estimate Date: 02/12/2016
Prep/Rev/App: RCK/ADC/MNO

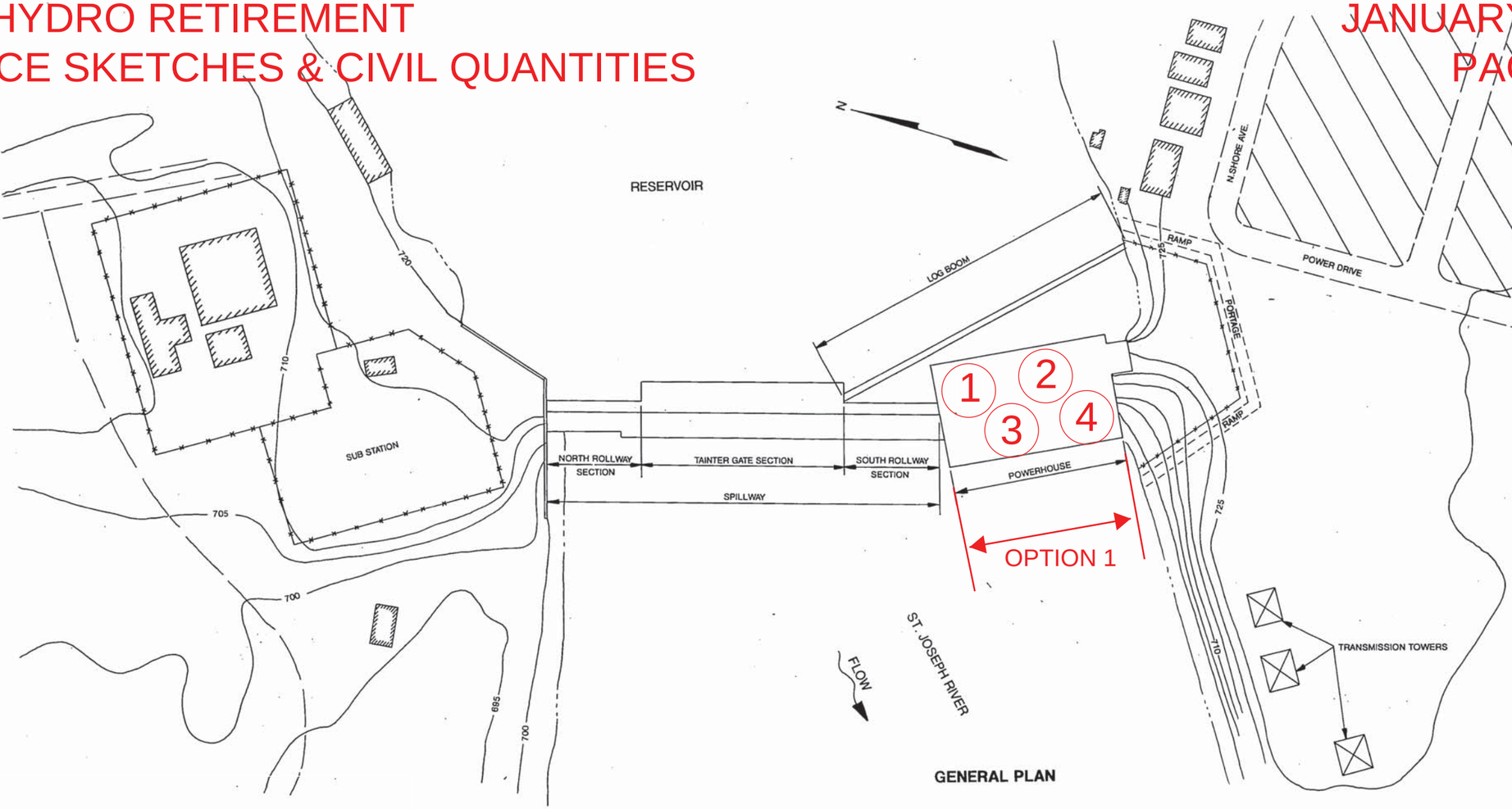
AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL/DISPOSAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - MISC MATERIALS	CONTROL PANEL APPROX 20' X 9' TALL	6.70 CY		121.33 /MH			12,730	-	12,730
			ASBESTOS REMOVAL - MISC MATERIALS	SWITCHBOARDS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - MISC MATERIALS	UNIDENTIFIED ABANDONED EQUIPMENT	9.00 CY		121.33 /MH			17,100	-	17,100
			ASBESTOS REMOVAL							37,430		37,430
			WHOLE PLANT DEMOLITION							37,430		37,430
			ASBESTOS ASBESTOS REMOVAL/DISPOSAL							37,430		37,430

EXHIBIT 4
Twin Branch Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

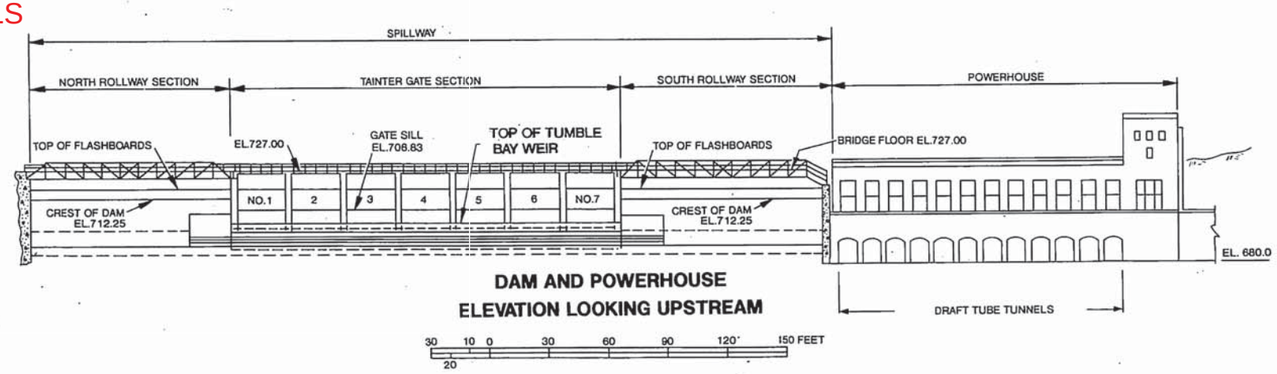
JANUARY 25, 2016
PAGE 1 OF 7



GENERAL PLAN

0 50 100 150 200 FEET

OPTION 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③GROUT DRAFT TUBE TUNNELS
④REMOVE STOPLOGS



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

30 20 10 0 30 60 90 120 150 FEET

EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

THIS DRAWING, EXHIBIT F, IS A PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

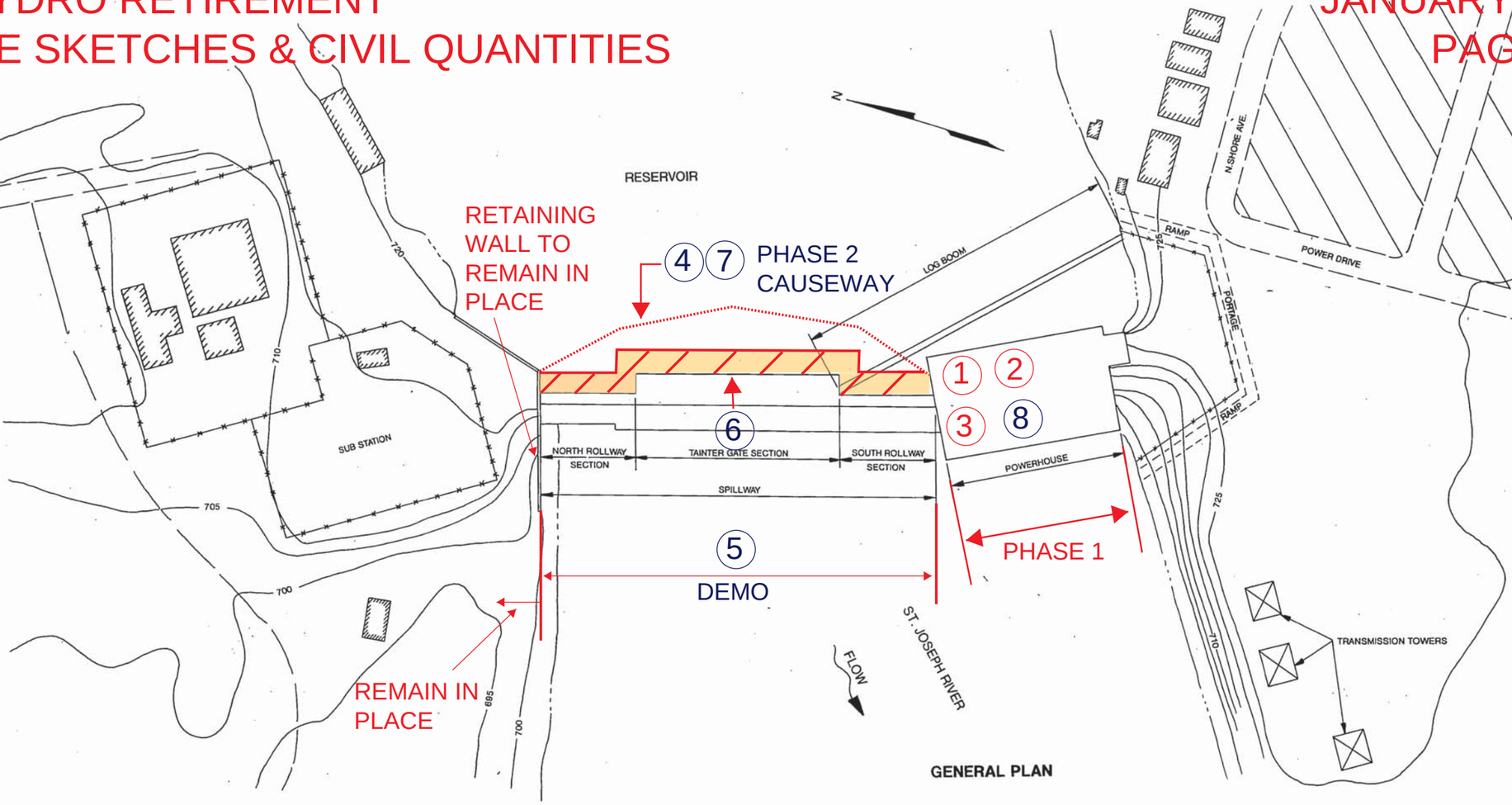
BY B.H. Bennett

DATE 10/31/91

FERC NO. 2579 – 010 – 1

TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 2 OF 7



PHASE 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③REMOVE STOPLOGS

PHASE 2
④CONSTRUCT CAUSEWAY
⑤DEMO TAINTER GATE AND ROLLWAY SECTIONS
⑥PLACE RIPRAP PROTECTION
⑦REMOVE CAUSEWAY
⑧GROUT DRAFT TUBES

OPTION 2

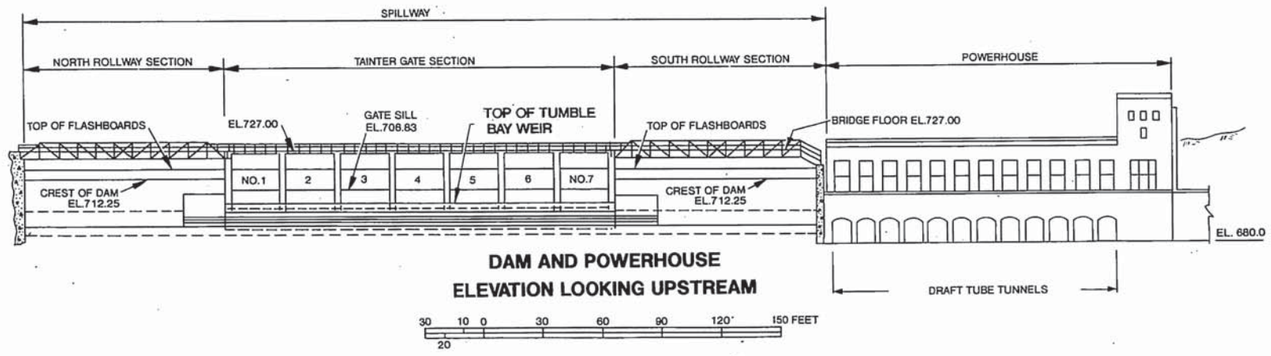


EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

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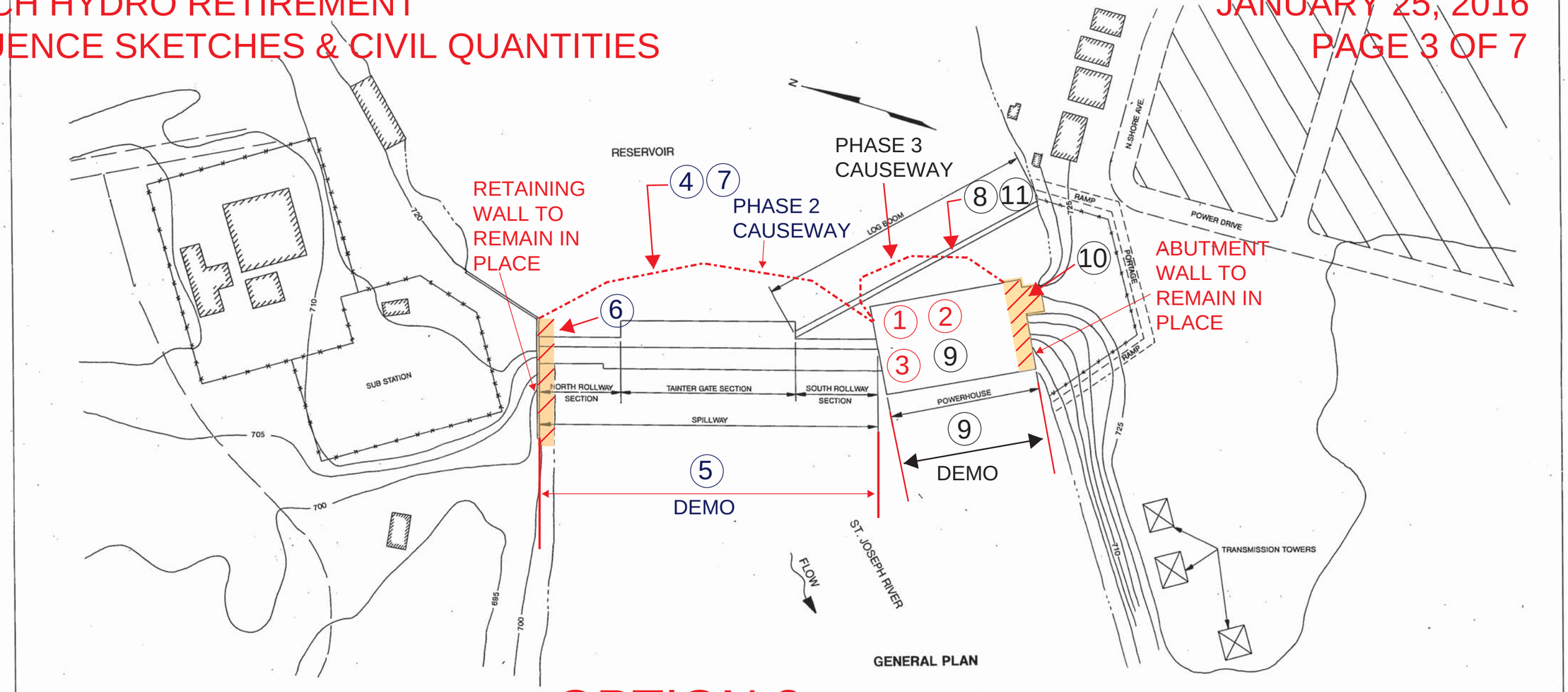
BY B.H. Bonnell

DATE 10/31/91

FERC NO. 2579 – 010 – 1

TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

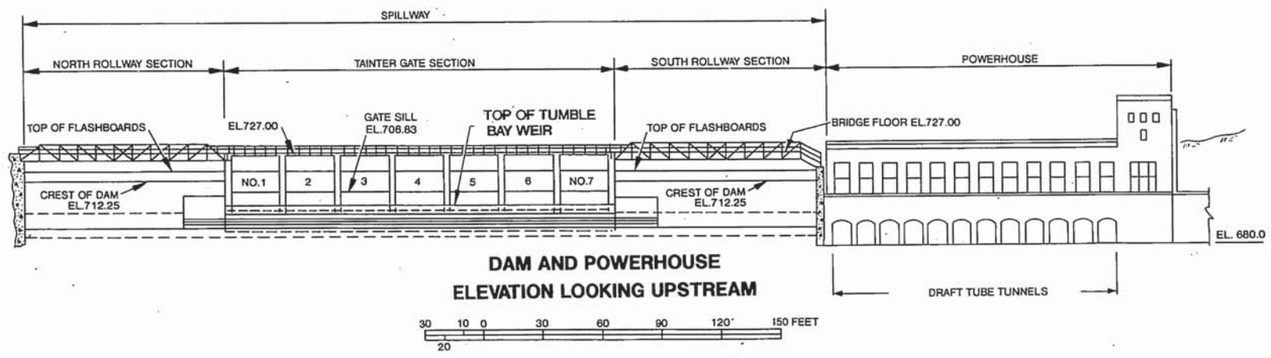
JANUARY 25, 2016
PAGE 3 OF 7



GENERAL PLAN

0 50 100 150 200 FEET

OPTION 3



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

30 10 0 30 60 90 120 150 FEET
20

PHASE 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③REMOVE STOPLOGS

PHASE 2
④CONSTRUCT CAUSEWAY
⑤DEMO TAINTER GATE AND ROLLWAY SECTIONS
⑥PLACE RIPRAP PROTECTION AT RETAINING WALL
⑦REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO POWERHOUSE
⑩ PLACE RIPRAP PROTECTION AT ABUTMENT WALL
⑪ REMOVE CAUSEWAY

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BY B.H. Bonnell

DATE 10/31/91

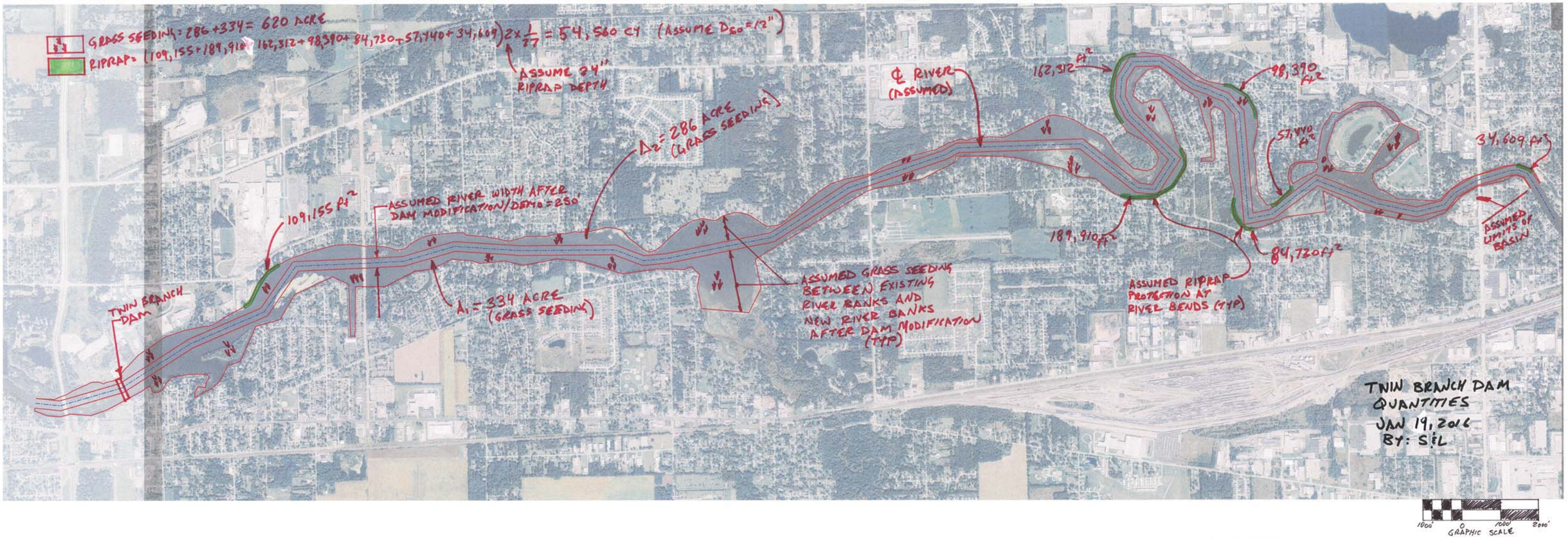
EXHIBIT F SHEET 1 OF 3

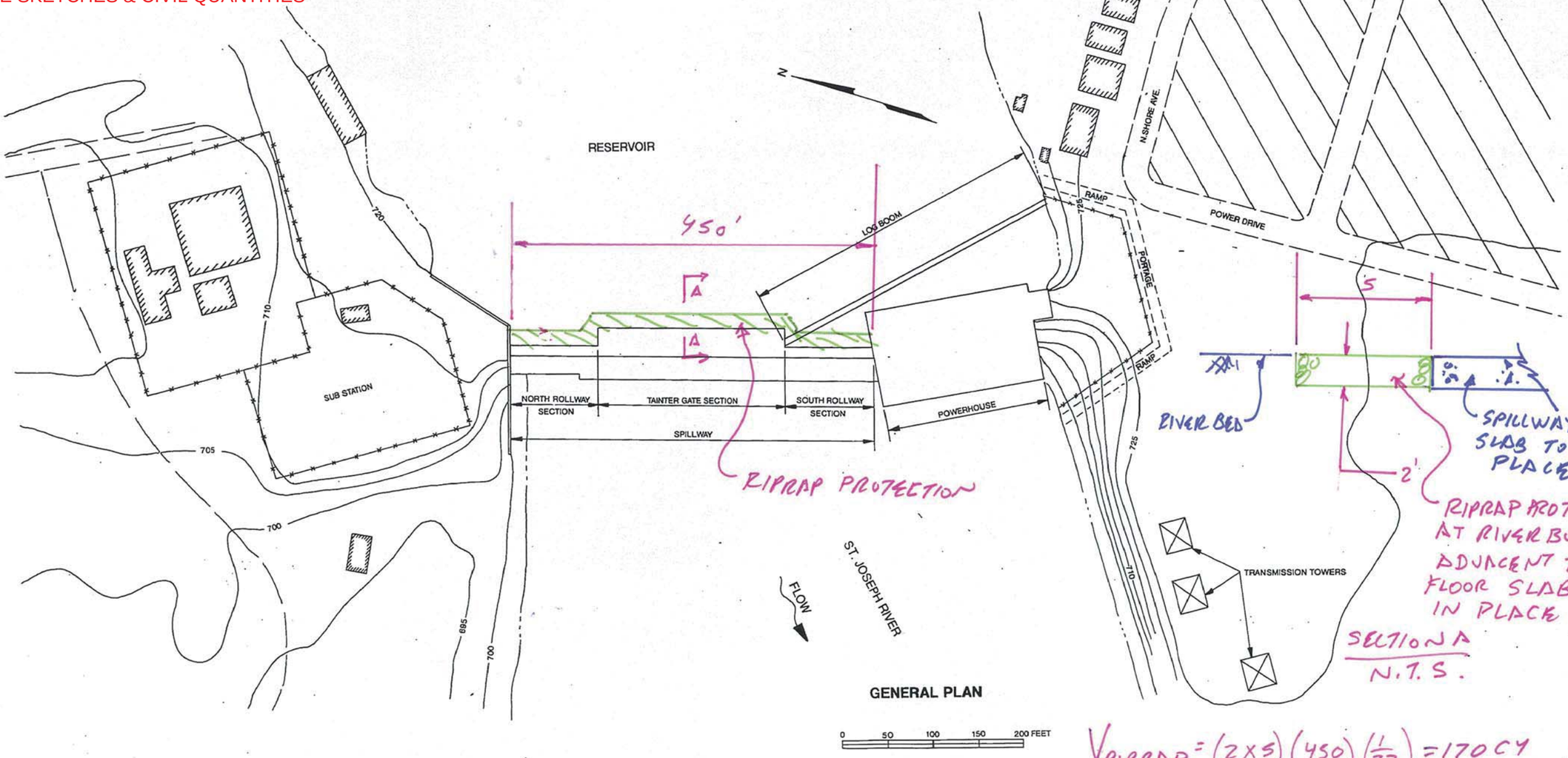
INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

FERC NO. 2579 – 010 – 1

TWIN BRANCH			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	620	ACRE	
RIPRAP PROTECTION	54,560	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	170	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	170	CY	2 ft riprap protection @ D(50)=12"

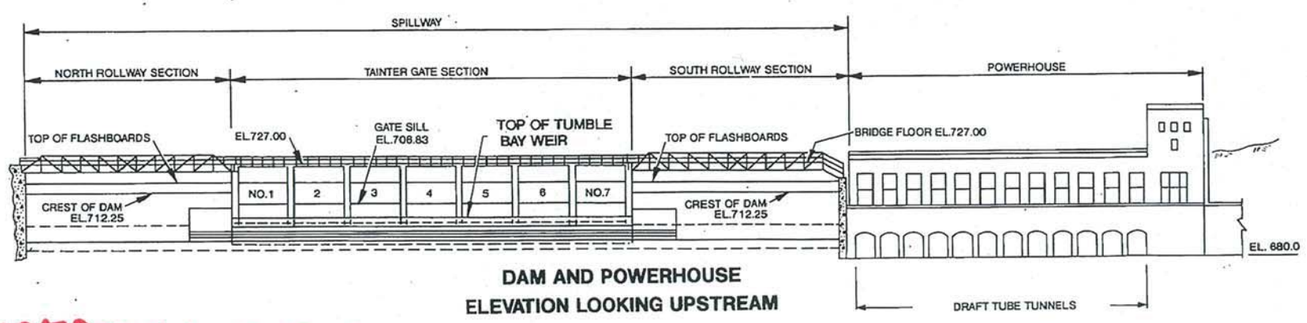
OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	620	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	54,560	CY	2 ft riprap protection @ D(50)=12"
~~RIPRAP PROTECTION AT DAM ABUTMENTS~~	~~2,120~~	~~CY~~	~~2 ft riprap protection @ D(50)=12"~~
~~EARTHWORK FILL AT DAM ABUTMENTS~~	~~15,305~~	~~CY~~	
RIVERBED EXCAVATION FOR RIPRAP	100	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT RETAINING WALLS	120	CY	2 ft riprap protection @ D(50)=12"


GRASS SEEDING = 286 + 334 = 620 ACRE
RIPRAP = (109,155 + 189,910 + 162,312 + 98,390 + 84,730 + 57,740 + 34,609) 2 x 1/27 = 54,560 CY (ASSUME D50 = 12")
ASSUME 24" RIPRAP DEPTH
℄ RIVER (ASSUMED)
162,312 ft²
98,390 ft²
57,740 ft²
34,609 ft³
ASSUMED LIMITS OF BASIN
189,910 ft²
84,720 ft²
109,155 ft²
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 250'
A2 = 286 ACRE (GRASS SEEDING)
A1 = 334 ACRE (GRASS SEEDING)
TWIN BRANCH DAM
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DAM MODIFICATION (TYP)
ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)
TWIN BRANCH DAM QUANTITIES
JAN 19, 2016
BY: S&L
1000' 0 1000' 2000'
GRAPHIC SCALE



$V_{RIPRAP} = (2 \times 5)(450)\left(\frac{1}{27}\right) = 170\ CY$

$V_{CUT} = V_{RIPRAP} = 170\ CY$



I&M CONCEPTUAL DEMO ESTIMATE
TWIN BRANCH RETIREMENT OPTION 2
CIVIL QUANTITIES

EXHIBIT F — SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

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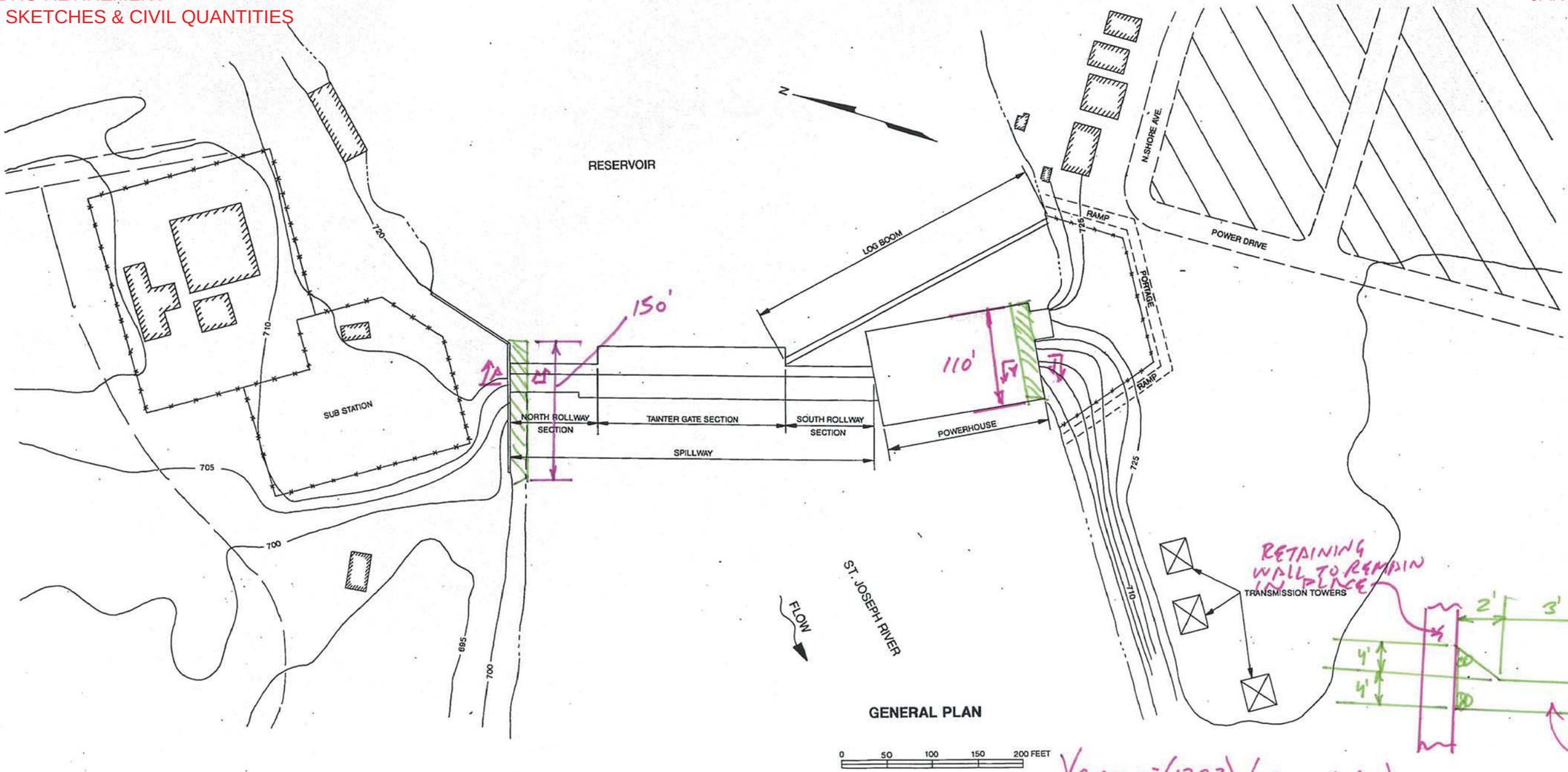
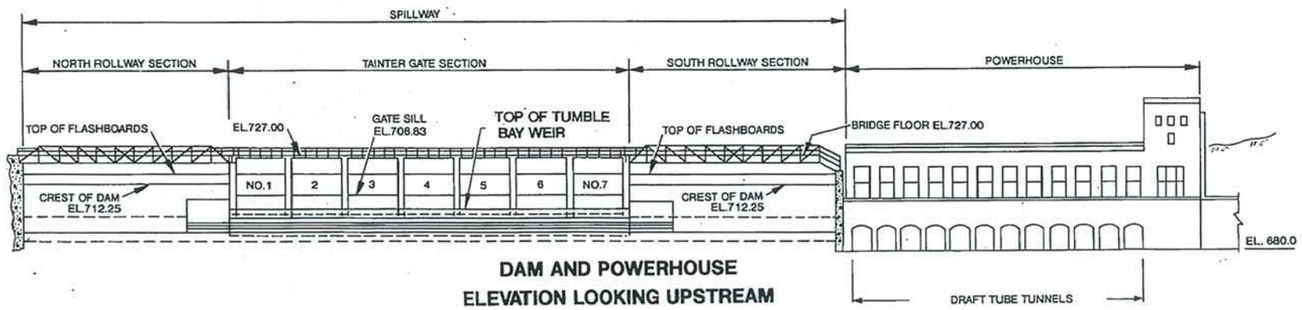
BY B.A. Hamilton

DATE 10/31/91



GENERAL PLAN

0 50 100 150 200 FEET



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

30 20 10 0 30 60 90 120 150 FEET

$V_{RIPRAP} = (12Ft^2)(150+110)\left(\frac{1}{27}\right) \approx 170\ CY$

$V_{CUT} = (2 \times 5)(150+110)\left(\frac{1}{27}\right) \approx 100\ CY$

EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

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BY _____

DATE 10/31/91

FERC NO. 2579 - 010 - 1

I & M CONCEPTUAL DEMO ESTIMATE
TWIN BRANCH RETIREMENT OPTION 3
CIVIL QUANTITIES