STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

FILED
July 26, 2017
INDIANA UTILITY
REGULATORY COMMISSION

PETITION OF INDIANA MICHIGAN POWER COMPANY, AN INDIANA CORPORATION, FOR (1) AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC UTILITY SERVICE THROUGH A PHASE IN RATE ADJUSTMENT; (2) APPROVAL OF: REVISED DEPRECIATION RATES; ACCOUNTING RELIEF; INCLUSION IN BASIC RATES AND CHARGES OF QUALIFIED POLLUTION CONTROL PROPERTY, CLEAN ENERGY PROJECTS AND COST OF BRINGING I&M'S SYSTEM TO ITS PRESENT STATE OF EFFICIENCY; RATE ADJUSTMENT MECHANISM PROPOSALS; COST DEFERRALS; MAJOR STORM DAMAGE RESTORATION RESERVE AND DISTRIBUTION VEGETATION MANAGEMENT PROGRAM RESERVE; AND AMORTIZATIONS; AND (3) FOR APPROVAL OF NEW SCHEDULES OF RATES, RULES AND REGULATIONS.	)	CAUSE NO. 44967-NONE

SUBMISSION OF DIRECT TESTIMONY OF JASON A. CASH

Petitioner, Indiana Michigan Power Company (I&M), by counsel, respectfully submits the direct testimony and attachments of Jason A. Cash in this Cause.

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing was served upon the following via electronic email, hand delivery or First Class, or United States Mail, postage prepaid this 26th day of July, 2017 to:

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I&M Exhibit: _____

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 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 my current position as Staff Accountant in AP&R in 2014.

Q. Have you previously testified before any regulatory commissions?

A. Yes. I have prepared depreciation studies and filed testimony before the Michigan Public Service Commission in Case No. U-18370 on behalf of I&M 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 am currently serving as an 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, 2016 (as adjusted, see below). Schedules I and II in the Depreciation Study Report 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.

I also support adjustment DEP-3 which adjusts the Test Year Rockport Unit 1 Asset Retirement Obligation (ARO) accretion and amortization expense.

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: Sargent & Lundy's dismantling studies performed for Rockport Unit 1 and the Company's hydroelectric 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: ARO Accretion and Depreciation Expense

Q. Were the attachments and workpapers that you are sponsoring prepared 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 several recent orders of the Indiana Utility Regulatory Commission (IURC or Commission):

- In Cause No. 44075, the Commission approved the Company's current steam, nuclear, hydroelectric, transmission, distribution and general plant depreciation rates.
- In Cause No. 44331, the Commission authorized I&M to depreciate Rockport's Dry Sorbent Injection (DSI) project utilizing a ten year life.
- In Cause No. 44523, the Commission authorized I&M to depreciate the Rockport Unit 1 Selective Catalytic Reduction (SCR) project utilizing a ten year life. (The Rockport SCR Project on Unit 1 is expected to be placed in service in 2017 and thus is included as an increase to plant in service in the depreciation study.)
- Depreciation rates for Rockport Unit 1 (excluding the DSI and SCR systems) were established in Cause No. 44555, which allowed the Company to combine the utility plant in service and depreciation reserve balances for the retired Tanners Creek Generating Plant with Rockport Unit 1.
- In Cause No. 44511, the Commission established depreciation rates for I&M's solar generating assets (Other Production Plant), which allowed the Company to depreciate its solar generating assets over a twenty year span.

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 total Company December 31, 2016 (as adjusted, see below) depreciable plant balances:

Figure JAC-1
Composite Depreciation Rates and Accruals
Based on Plant In Service at December 31, 2016 (as adjusted)
(Total Company)

	Existing		Study		
Functional Plant Group	Rates	Accruals ($)	Rates	Accruals ($)	Difference ($)
Steam Production	3.45%	34,068,118	7.81%	77,231,663	43,163,545
Nuclear Production	1.73%	55,700,914	3.23%	103,903,848	48,202,934
Hydraulic Production	3.03%	1,628,049	2.29%	1,229,739	(398,310)
Other Production (a)	5.00%	1,845,296	5.26%	1,942,756	97,460
Transmission	1.71%	24,937,661	1.94%	28,386,882	3,449,221
Distribution	2.79%	52,754,114	4.40%	83,007,393	30,253,279
General	3.14%	3,575,462	3.53%	4,020,198	444,736
Total Depreciable Plant	2.25%	174,509,614	3.86%	299,722,479	125,212,865

Note (a) - the 5.26% depreciation rate for Other Production plant is for solar facilities. The 5.26% rate is based on an estimated useful life of 20 years, includes estimated net salvage costs and was approved by the Commission in the order in Cause No. 44511.

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, 2016 (as adjusted, see below) would produce an increase in annual depreciation expense of

$125,212,865. 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 Stegall and estimate an annual increase to depreciation expense of approximately $76.6 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]

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

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 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 these amounts, I&M commissioned Sargent & Lundy (S&L), an independent engineering firm, to update their conceptual dismantling cost estimate for Rockport Unit 1 and to prepare initial conceptual dismantling cost estimates for I&M's hydraulic plants. The recommended depreciation rates included the dismantling cost for Rockport Unit 1 and the hydraulic plants at their estimated retirement dates.

Q. Why did I&M retain S&L to perform dismantling studies for the Company's steam and hydraulic generating units?

A. I&M retained S&L to provide dismantling studies which estimate the final removal cost and salvage amounts specific to each of the Company's steam and hydraulic generating stations. The estimates provide a reasonable method to arrive at future expected terminal net salvage amounts for the Company's steam and hydraulic generating units. The S&L dismantling studies are provided as Attachment JAC-2.

Q. Do you consider the dismantling studies prepared by S&L 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. Were there any adjustments made to the results provided by the dismantling studies when adding the S&L net salvage amounts to the depreciation study?

A. Yes. S&L provided terminal net salvage amounts, excluding any asbestos, ash pond, or landfill-type removal costs, which were stated at a 2015 price level. I applied a 2.30% inflation rate factor to the net salvage amounts provided by the S&L studies to determine the terminal net salvage amount at each plant's retirement year. The terminal net salvage amount after inflation was used in the calculation of net salvage percentages in the depreciation study.

Q. What is the source of the 2.30% inflation rate used for this purpose?

A. The 2.30% inflation rate was taken from the *Livingston Survey*, a December 9, 2016 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 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 Lucas.

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. 44075, which included depreciable plant balances at December 31, 2010?

A. Yes. Other than the retirement of Tanners Creek, which was addressed in Cause No. 44555, both the Rockport Generating Plant and the Cook Nuclear Plant (Cook) had increases to depreciable plant in service of $312.6 million and $1.1 billion, respectively, since the last depreciation study was performed.

In the prior depreciation study, I&M estimated a 2044 retirement year for Rockport Unit 1. The current depreciation study uses the Company's revised 2028 retirement year for Rockport Unit 1, which is discussed by Company witness Thomas.

Final retirement type costs related to the transfer of Tanners Creek were charged to accumulated depreciation. These costs include the final demolition cost; the remaining unused materials and supplies; the work performed to determine the plant's ongoing operation; and the costs associated with ash pond, landfill, and asbestos remediation at the site. The effect of these Tanners Creek retirement-related adjustments decreased total Company accumulated depreciation by $102.7 million.

Finally, in Cause No. 44075, the depreciation study used an average service life of twenty five years for meters based on the retirement history as of 2010. The current depreciation study reflects the Company's intention to replace its current meters with new Advanced Metering Infrastructure (AMI) meters within five years. As a result of this complete change-out, the depreciation study uses an average

remaining life of five years for the existing meters in Account 370, Meters. Company witness Thomas discusses the Company's plans for the meter replacements.

Q. Please elaborate on I&M's existing depreciation rate for meters.

A. I&M's existing depreciation rate for Account 370, Meters, was approved in Cause No. 44075 and became effective March 1, 2013. The rate was based on a depreciation study on the plant in service balances as of December 31, 2010. At the depreciation study date, I&M's meter account largely consisted of electromechanical meters which contributed to the 25-year average service life analyzed and established for Account 370. During the same time, I&M had begun its conversion to Automated Meter Reading (AMR) meters but the installations were not completed in Indiana until 2013. Typically, AMR meters have an expected service life of 15 years. The depreciation rate that was approved for Account 370 in Cause No. 44075 was reflective of historical service lives and not fully reflective of the meters that were providing service when new rates were implemented as a result of that case.

Q. Please explain why you are proposing a five year remaining life for the current investment in Account 370 instead of performing a historical analysis of the account.

A. As previously mentioned, the Company expects to transition to AMI meters across its service territory over the next five years. This would require the Company to also retire all of the meters that are currently installed during the same five year period. A depreciation rate was calculated to reflect the actual expected remaining service life of the current investment in Account 370, including net salvage and aligns with the Company's future expectation to transition to AMI meters and in doing so provides a

depreciation amount necessary to maintain the Company's property in an operating state of efficiency corresponding to the progress of the industry.[2]

Q. Since I&M expects to install new AMI meters in its service territory within the next five years, what is your recommendation for establishing a new depreciation rate for meters?

A. I&M is requesting Commission approval of an 8.13% depreciation rate for any newly installed AMI Meters. The 8.13% depreciation rate is based on an expected useful life of 15 years and also includes an estimate for net salvage. The average service life of AMI meters is based on estimates that were provided by the Company and the manufacturer of the meters. The net salvage estimate was calculated using the retirement history of Account 370 and is also the same net salvage (-22%) that was previously approved for Account 370 in Cause No. 44075.

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 on the books at December 31, 2016, the depreciation study also includes an adjustment for 2017 forecasted additions to plant in service and the associated accumulated depreciation at Rockport, Cook, and the hydraulic generating stations. These adjustments using 2017 forecasted additions increased original cost and accumulated depreciation as follows:

- Rockport Plant – Original cost $156.1 million; accumulated depreciation $21.4 million.

[2] *See* Ind. Code § 8-1-2-19.

- Cook Plant – Original cost $360.3 million; accumulated depreciation $54.0 million.
- Hydraulic Production Plant – Original cost $3.5 million; accumulated depreciation $1.6 million.

The forecasted major additions at Rockport included the engineering, procurement, construction, commissioning, and start-up of a selective catalytic reduction system (SCR) on Unit 1 totaling $124.2 million. Company witness Kerns discusses the major projects at Rockport. The forecasted major additions at Cook are mainly for costs related to the Life Cycle Management (LCM) project ($290.5 million) and for license compliance at the plant ($47.2 million). Company witness Lies discusses the major projects at Cook. The forecasted additions and accumulated depreciation to Rockport, Cook, and the hydraulic generating station plant balances were included with the depreciation study because generation resources have finite end-of-life dates. Including the expected additions and accumulated depreciation will ensure that more accurate depreciation rates are established for each generating station when rates become effective in 2018. 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 likelihood and magnitude that future customer rates will include costs for assets that 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 Project. I&M received approval from the IURC (Cause Nos. 44182 and 44331) to recover a return on construction work in progress (CWIP) for these projects while they are under construction. 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 $4.7 million and increased accumulated depreciation by $7.9M while the DSI AFUDC adjustment decreased Rockport's original cost by $720,000 and decreased accumulated depreciation by $90,000.

Q. How does I&M address depreciation related to the Fort Wayne City Lights property in the depreciation study?

A. Distribution and transmission depreciation rates calculated by the depreciation study include the Fort Wayne City Lights property's original cost and accumulated

depreciation. In its 2011 order in Cause No. 43980, the Commission authorized the Company to calculate depreciation expense for the acquired City Lights property using a fifteen year term. Since the City Lights property is using a different depreciation rate than other distribution and transmission property, it was necessary record the property in separate locations in I&M's property records.

Q. What are you recommending regarding the Fort Wayne City Lights property?

A. I&M recommends that the Commission approve the transmission and distribution depreciation rates calculated by the depreciation study and also allow the Company to combine the City Lights property with the non-City Lights property in its property records. Accounting for the City Lights property separately requires additional instructions to field personnel, extra administrative effort, and separate work orders. Yet the City Lights property constitutes only a small fraction of I&M's distribution and transmission property. Specifically, as of December 31, 2016, the City Lights property was 0.09% of I&M's total transmission property and 0.52% of I&M's total distribution property. Allowing I&M to combine the City Lights property with other distribution and transmission property in its property records would eliminate an administrative burden for I&M.

Q. Has the Commission approved unique depreciation rates established for the DSI project at Rockport Units 1 and 2 and its SCR project at Rockport Unit 1?

A. Yes. In Cause No. 44331, the Commission authorized I&M to establish depreciation rates that would allow the Company to depreciate Rockport's DSI project over a ten year life. Similarly in Cause No. 44523, the Commission authorized I&M to establish

depreciation rates that would allow the Company to depreciate the Rockport Unit 1 SCR project over a ten year life.

Q. As a part of this study, have you continued to depreciate both the DSI and SCR projects over a ten year life?

A. No. The Rockport Unit 1 DSI and SCR projects are being depreciated through 2028 and the Rockport Unit 2 DSI project is being depreciated through 2022, consistent with the other Rockport plant assets.

Q. If the proposed end of life date for Rockport Unit 1 is not approved by the Commission, what is your recommendation as it relates to the depreciation rates for the Rockport Unit 1 DSI and SCR projects?

A. I recommend that the Commission allow for the continued use of a ten year life for both projects as authorized in Cause Nos. 44331 and 44523.

Q. Are you sponsoring any adjustments to the Cost of Service study that is being filed with this case?

A. Yes. I am sponsoring adjustment DEP-3 which adjusts the Test Year accretion and depreciation expense related to the Rockport Unit 1 ARO.

Q. What is the reason for the adjustment being made to the forecasted amounts of ARO accretion and depreciation expenses?

A. As mentioned earlier in my testimony and also addressed by Company witness Thomas, Rockport Unit 1 is expected to retire by 2028. In the forecast that is being used in this case, the ARO accretion and depreciation expense that was projected during the test year used the previous end of life date approved by the Commission in Cause No. 44075, or 2044. An adjustment is needed in both the ARO accretion

expense and ARO depreciation expense in order to reflect the change in the retirement date of Rockport Unit 1 to 2028, which is comparable to the method used to calculate depreciation rates. The result of the adjustments is an increase to ARO accretion expense of $300,000 and an increase to ARO depreciation expense of $900,000.

STUDY RESULTS

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

A. The composite depreciation rate for Steam Production Plant increased from 3.45% to 7.81% primarily due to the change in the Company's expected retirement date for Rockport Unit 1 from 2044 to 2028 and the additional investment being made at the plant. As I noted above, the change in the Rockport Unit 1's retirement date is discussed by Company witness Thomas and the major projects at Rockport are discussed by Company witness Kerns.

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

A. The composite rate for Nuclear Production Plant increased from 1.73% to 3.23% mainly due to a $1.1 billion increase in the depreciable plant in service balance since the 2010 depreciation study. The increase in depreciable nuclear plant in service since 2010 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 decreased from 3.03% to 2.29% largely due to the decrease in the expected cost of removal (less salvage) for the Company's hydraulic plants. I&M contracted with S&L to provide a conceptual

demolition study for the hydraulic plants that included three possible retirement options: (1) non-power operation, (2) partial removal of the dam structures, and (3) complete removal of the dam and powerhouse. The depreciation study uses the S&L cost estimate from option 1, which is the least cost option that considers leaving intact all of the existing water-impounding structures and the powerhouse and removing only the electric generating units and their auxiliary equipment.

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

A. In 2015 and 2016, I&M placed four solar projects in service. At December 31, 2016, Other Production Plant consisted of the Deer Creek, Olive, Twin Branch, and Watervliet solar projects. I&M placed the Deer Creek solar project in service in December 2015 and the other solar projects in service during 2016. I&M is requesting Commission approval of a 5.26% composite depreciation rate for its solar projects. The 5.26% depreciation rate is based on an expected useful life of twenty years and also includes estimated net salvage. The twenty year life was approved by the Commission in Cause No. 44511.

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

A. The depreciation rate for Transmission Plant increased from 1.71% to 1.94% due to increases in the net salvage ratio for five accounts (Accounts 352, 353, 355, 356, and 358) and decreases in the average service life for three accounts (Accounts 352, 355, and 356). The depreciation rate increase was partially offset by an increase in average service life for three accounts (Accounts 353, 354, and 358).

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

A. The depreciation rate for Distribution Plant increased from 2.79% to 4.40% mainly due to the reduction of the remaining life in Account 370, Meters, to five years. In addition, decreases in the average service life for seven accounts (Accounts 364, 365, 366, 368, 369, 371, and 373) and increases in the net salvage ratio for seven accounts (Accounts 362, 364, 365, 368, 369, 371, and 373) factored into the increased rate. The rate increase was partially offset by an increase in average service life for two accounts (Accounts 361 and 367) and a decrease in the net salvage ratio for one account (Account 361).

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

A. The depreciation rate for General Plant increased from 3.14% to 3.53% due to increases in the net salvage ratio for four accounts (Accounts 390, 391, 397, 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, Staff Accountant – Accounting Policy and Research of American Electric Power Service Corporation, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date: 7/7/17

Jason A. Cash

INDIANA MICHIGAN POWER COMPANY

DEPRECIATION STUDY REPORT

OF

ELECTRIC PLANT IN SERVICE

AT DECEMBER 31, 2016

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, 2016 adjusted to include 2017 forecasted additions to production plant. The study was prepared by Jason A. Cash, 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, 2016 (as adjusted)
(Total Company)

	Existing		Study		
Functional Plant Group	Rates	Accruals ($)	Rates	Accruals ($)	Difference ($)
Steam Production	3.45%	34,068,118	7.81%	77,231,663	43,163,545
Nuclear Production	1.73%	55,700,914	3.23%	103,903,848	48,202,934
Hydraulic Production	3.03%	1,628,049	2.29%	1,229,739	(398,310)
Other Production (a)	5.00%	1,845,296	5.26%	1,942,756	97,460
Transmission	1.71%	24,937,661	1.94%	28,386,882	3,449,221
Distribution	2.79%	52,754,114	4.40%	83,007,393	30,253,279
General	3.14%	3,575,462	3.53%	4,020,198	444,736
Total Depreciable Plant	2.25%	174,509,614	3.86%	299,722,479	125,212,865

Note (a) - the 5.26% depreciation rate for Other Production plant is for solar facilities. The 5.26% rate is based on an estimated useful life of 20 years, includes estimated net salvage costs and was approved by the Commission in the order in Cause No. 44511.

Based on total Company depreciable plant in-service as of December 31, 2016 (as adjusted), I am recommending an increase in Indiana depreciation rates that would produce an annual increase in depreciation expense of $125.2 million 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) are discussed in detail by Company witness Thomas. For Nuclear and Hydraulic Production plants, the retirement dates were based on the Nuclear Regulatory Commission (NRC) and FERC license expiration dates for the plants, except for the Constantine hydraulic plant where I&M has plans to file for a 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 Tanners Creek steam generation plant was retired in May 2015 and the Company was permitted to combine the utility plant in service and

depreciation reserve balances for Tanners Creek plant with Rockport Unit 1 as per the order in Cause No. 44555.

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 evaluated each of the Rockport generating units and estimated the following retirement dates for the units:

Plant	Unit	Retirement Date
Rockport	1	2028
Rockport	2	2022

The estimated retirement date for Rockport Unit 1 was changed to 2028 in the current depreciation study from the 2044 retirement date used in Cause No. 44075 and Cause No. 44555. The 2028 retirement date for Rockport Unit 1 is discussed in detail by Company witness Thomas.

The estimated retirement date for the associated owned equipment at Rockport Unit 2 is based on the 2022 expiration date of the lease.

In addition to the change in retirement date for Rockport Unit 1, I&M added $312.6 million to the original cost of Rockport Plant since the last depreciation study. Major plant additions include a dry sorbent injection (DSI) system that was placed in service in 2015 and a selective catalytic

reduction system (SCR) on Rockport Unit 1, which will be completed in 2017. These two major projects are the principal reason for the increase in original cost since the last depreciation study. This depreciation study uses the remaining life of Units 1 and 2 to calculate updated depreciation rates for the DSI system which is currently being depreciated over a 10 year period as permitted in the order from Cause No. 44331. Additionally, this depreciation study uses the remaining life of Unit 1 to calculate updated depreciation rates for the SCR system which will be depreciated over a 10 year period as permitted in the order from Cause No. 44523.

The major additions at Rockport since the last depreciation study along with the change in the retirement date are the two primary reasons for the higher recommended depreciation rates.

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 $1.1 billion since the last depreciation study (with December 31, 2010 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.

Constantine Plant's retirement date was updated from the current license expiration date of 2023 to 2053 since I&M has plans to request a FERC license extension for 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

357.0 Underground Conduit

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 1954-2016. 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 with Sargent & Lundy (S&L) to update the conceptual demolition cost estimate for Rockport Unit 1 that was included in I&M's last depreciation study and incorporated in I&M's current depreciation rates. The updated S&L cost estimate to demolish Rockport Unit 1 is based on current (2015) price levels which were inflated to the retirement date in the depreciation study. The estimate of demolition costs was included in the net salvage ratios for Steam Production Plant. S&L'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 1995-2016. 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 2016. 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 2016. The gross salvage and cost of removal percentages were calculated for the twenty-two year time period (1995 to 2016) 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 2001-2016. This interim salvage analysis calculates annual interim salvage, removal and net salvage percentages as compared to original cost retirements.

As previously approved in the prior depreciation study from Cause No. 44075, I&M used a Hydraulic Plant negative net salvage percentage of -25%. I&M's current depreciation study uses the interim net salvage analysis mentioned above plus S&L conceptual terminal demolition cost estimates for each of the Company's hydraulic plants to determine the total net salvage amount to include in the depreciation rate calculation. The S&L cost estimates to demolish the hydraulic plants are based on current (2015) price levels which were inflated to each plant's estimated retirement date in the depreciation study. Each of the hydraulic demolition cost estimates includes three possible scenarios to calculate an estimated demolition cost. The three scenarios are; 1) Non-power operation, 2) Partial removal of the dam structures and 3) Complete removal of the dam and powerhouse. Scenario 1, leaving intact all of the existing water impounding structures and the powerhouse and removing only the electric generating units

and their auxiliary equipment was used to calculate hydraulic plant depreciation rates. This scenario reduced the estimated negative net salvage percentage used to calculate depreciation rates to -5%.

4. Net Salvage - Other Production Plant

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 2016. 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 2016. The gross salvage and cost of removal percentages were calculated for the twenty-two year time period (1995 to 2016) 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

1. Tanners Creek Plant

The Tanners Creek Plant was retired in May 2015. I&M was permitted to combine the utility plant in service and depreciation reserve balances for Tanners Creek Plant with Rockport Unit 1 as per the Commission's order in Cause No. 44555 dated May 20, 2015. The final retirement type costs related to the transfer of Tanners Creek were charged to accumulated depreciation. These costs include; the final demolition cost; the remaining unused materials and supplies; the work performed to determine the plant's ongoing operation; and the costs associated with ash pond, landfill and asbestos remediation at the site. The effect of these Tanners Creek retirement related adjustments decreased total Company

accumulated depreciation by $102.7 million.

2. Rockport Plant

Depreciation rates for Rockport plant increased from 3.45% to 7.81% primarily due to a $312.6 million increase in the original cost of the plant combined with a shorter remaining life since the prior depreciation study (plant balances at December 31, 2010).

The current accrual rates assume that Rockport Unit 1 will be retired in 2028 resulting in a 44 year life which is 16 years less than the estimated retirement date used by the prior study. As in the prior study, final demolition costs are included in the depreciation rates. The estimates of demolition costs were developed by S&L. The estimated demolition cost less salvage for Rockport Unit 1 in 2015 dollars is $84,257,161. The prior demolition cost was estimated to be $69,883,200 in 2010. A major factor for the current estimate's higher cost is the scrap value of property salvaged which was estimated to be $19,378,900 in the 2010 estimate and $13,553,936 in the 2015 estimate.

Rockport Unit 1 is co-owned by I&M and AEP Generating Company. I&M's share of the current demolition cost is 50% or $42,128,580.

3. Rockport Unit 2 Owned Assets

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 lease is 2022.

<u>Nuclear Production Plant</u>

The depreciation rate for Nuclear Production Plant increased from 1.73% to 3.23% mainly due to a $1.1 billion increase in the depreciable plant in service balance since the 2010 depreciation study. The increase in depreciable nuclear plant in service since 2010 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 decreased from 3.03% to 2.29% largely due to the decrease in the expected cost of removal (less salvage) for the Company's Hydraulic plants.

Other Production Plant

The depreciation rates for Other Production Plant increased slightly from 5.00% to 5.26%. The 5.26% depreciation rate is based on an expected useful life of twenty years and also includes an estimate for net salvage. The twenty year life was approved by the Commission in Cause No. 44511.

Transmission Plant

The depreciation rate for Transmission Plant increased from 1.71% to 1.94% due to increases in the net salvage ratio for five accounts (accounts 352, 353, 355, 356 and 358) and decreases in the average service life for three accounts (accounts 352, 355 and 356). The depreciation rate increase was partially offset by an increase in average service life for three accounts (accounts 353, 354 and 358).

Distribution Plant

The depreciation rate for Distribution Plant increased from 2.79% to 4.40% mainly due to the reduction of the remaining life in account 370 to 5 years. In addition, decreases in the average service life for seven accounts (accounts 364, 365, 366, 368, 369, 371 and 373) and increases in the net salvage ratio for seven accounts (account 362, 364, 365, 368, 369, 371 and 373) factored into the increased rate. The rate increase was partially offset by an increase in average service life for two accounts (accounts 361, and 367) and a decrease in the net salvage ratio for one account (account 361).

General Plant

The depreciation rate for General Plant increased from 3.14% to 3.53% due to increases in the net salvage ratio for four accounts (accounts 390, 391, 397 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, 2016
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST (1)	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	99,017,726	1.09	107,929,321	74,412,398	32,363,830	75,565,491	11.36	6,651,892	6.72%
312.0	Boiler Plant Equipment	570,381,956	1.09	621,716,332	323,566,308	140,727,157	480,989,175	11.01	43,686,574	7.66%
314.0	Turbogenerator Units	96,471,667	1.09	105,154,117	67,982,612	29,567,354	75,586,763	10.83	6,979,387	7.23%
315.0	Accessory Electrical Equipment	61,506,149	1.09	67,041,702	46,947,547	20,418,673	46,623,029	11.22	4,155,350	6.76%
316.0	Miscellaneous Power Plant Equip.	16,195,891	1.09	17,653,521	11,622,911	5,055,096	12,598,425	10.85	1,161,145	7.17%
	Total Rockport Unit 1	843,573,389	1.09	919,494,994	524,531,776	228,132,110	691,362,884	11.04	62,634,348	7.42%
Rockport ACI										
312.0	Boiler Plant Equipment	11,817,734	1.09	12,881,330	5,215,198	5,572,354	7,308,976	11.01	663,849	5.62%
Rockport Unit 1 DSI										
311.0	Structures & Improvements	2,904,445	1.09	3,165,845	687,785	576,224	2,589,621	11.36	227,960	7.85%
312.0	Boiler Plant Equipment	46,248,904	1.09	50,411,305	6,846,682	5,736,130	44,675,175	11.01	4,057,691	8.77%
	Total Rockport Unit 1 DSI	49,153,349	1.09	53,577,150	7,534,467	6,312,354	47,264,796	11.03	4,285,650	8.72%
Rockport Unit 2 Owned Assets										
311.0	Structures & Improvements	4,085,306	1.01	4,126,159	3,393,568	3,354,756	771,403	5.47	141,024	3.45%
312.0	Boiler Plant Equipment	18,815,711	1.01	19,003,868	15,369,430	15,193,652	3,810,216	5.39	706,905	3.76%
314.0	Turbogenerator Units	872,755	1.01	881,483	703,789	695,740	185,743	5.35	34,718	3.98%
315.0	Accessory Electrical Equipment	2,097,030	1.01	2,118,000	1,720,088	1,700,416	417,584	5.44	76,762	3.66%
316.0	Miscellaneous Power Plant Equip.	6,827,623	1.01	6,895,899	5,733,722	5,668,145	1,227,754	5.35	229,487	3.36%
	Total Rockport Unit 2 Owned Assets	32,698,425	1.01	33,025,409	26,920,597	26,612,709	6,412,700	5.39	1,188,896	3.64%
Rockport Unit 2 DSI										
311.0	Structures & Improvements	499,764	1.01	504,762	109,245	60,383	444,379	5.47	81,239	16.26%
312.0	Boiler Plant Equipment	50,863,781	1.01	51,372,419	11,247,323	6,216,721	45,155,698	5.39	8,377,680	16.47%
	Total Rockport Unit 2 DSI	51,363,545	1.01	51,877,180	11,356,568	6,277,104	45,600,076	5.39	8,458,920	16.47%
	Total Rockport Plant	988,606,442	1.08	1,070,856,064	575,558,606	272,906,631	797,949,433	10.33	77,231,663	7.81%
Total Steam Production Plant		**988,606,442**	**1.08**	**1,070,856,064**	**575,558,606**	**272,906,631**	**797,949,433**	**10.33**	**77,231,663**	**7.81%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2016
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST (1)	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	82,332,758	1.01	83,156,086	53,740,656	51,658,382	31,497,704	17.07	1,845,208	2.24%
322.0	Reactor Plant Equipment	680,859,321	1.02	694,476,507	342,875,677	329,590,372	364,886,135	16.49	22,127,722	3.25%
323.0	Turbogenerator Units	283,222,648	1.02	288,887,101	118,683,964	114,085,351	174,801,750	15.39	11,358,138	4.01%
324.0	Accessory Electrical Equipment	108,543,364	1.00	108,543,364	60,159,844	57,828,848	50,714,516	16.77	3,024,121	2.79%
325.0	Miscellaneous Power Plant Equip.	35,791,947	1.00	35,791,947	15,444,276	14,845,861	20,946,086	16.32	1,283,461	3.59%
	Total Cook Unit 1	1,190,750,038	1.02	1,210,855,005	590,904,417	568,008,814	642,846,191	16.22	39,638,651	3.33%
Cook Unit 2										
321.0	Structures & Improvements	349,124,308	1.01	352,615,551	181,457,018	174,426,155	178,189,396	19.91	8,949,744	2.56%
322.0	Reactor Plant Equipment	892,386,003	1.02	910,233,723	412,777,169	396,783,411	513,450,312	19.11	26,868,148	3.01%
323.0	Turbogenerator Units	424,972,479	1.01	429,222,204	127,517,407	122,576,527	306,645,677	17.60	17,423,050	4.10%
324.0	Accessory Electrical Equipment	151,555,144	0.99	150,039,593	65,620,924	63,078,329	86,961,264	19.49	4,461,840	2.94%
325.0	Miscellaneous Power Plant Equip.	208,473,957	1.00	208,473,957	87,984,684	84,575,567	123,898,390	18.88	6,562,415	3.15%
	Total Cook Unit 2	2,026,511,891	1.01	2,050,585,027	875,357,202	841,439,989	1,209,145,038	18.81	64,265,196	3.17%
Total Nuclear Production Plant		**3,217,261,929**	**1.01**	**3,261,440,032**	**1,466,261,619**	**1,409,448,802**	**1,851,991,229**	**17.82**	**103,903,848**	**3.23%**
HYDRAULIC PRODUCTION PLANT										
Berrien Springs										
331.0	Structures & Improvements	541,581	1.04	563,244	264,242	296,399	266,845	19.14	13,942	2.57%
332.0	Reservoirs, Dams & Waterways	5,272,257	1.04	5,483,147	3,170,176	3,555,972	1,927,175	19.31	99,802	1.89%
333.0	Waterwheels, Turbines & Generators	7,402,466	1.04	7,698,565	3,856,439	4,325,750	3,372,815	18.89	178,550	2.41%
334.0	Accessory Electrical Equip.	1,251,525	1.04	1,301,586	712,549	799,263	502,323	18.61	26,992	2.16%
335.0	Misc. Power Plant Equip.	814,894	1.04	847,490	384,288	431,054	416,436	19.06	21,849	2.68%
	Total Berrien Springs	15,282,723	1.04	15,894,032	8,387,694	9,408,438	6,485,594	19.01	341,135	2.23%
Buchanan										
331.0	Structures & Improvements	607,893	1.05	638,288	272,344	305,487	332,801	19.14	17,388	2.86%
332.0	Reservoirs, Dams & Waterways	4,599,280	1.05	4,829,244	2,940,381	3,298,212	1,531,032	19.31	79,287	1.72%
333.0	Waterwheels, Turbines & Generators	1,321,201	1.05	1,387,261	855,142	959,209	428,052	18.89	22,660	1.72%
334.0	Accessory Electrical Equip.	1,043,491	1.05	1,095,666	626,591	702,844	392,822	18.61	21,108	2.02%
335.0	Misc. Power Plant Equip.	270,129	1.05	283,635	133,711	149,983	133,652	19.06	7,012	2.60%
	Total Buchanan	7,841,994	1.05	8,234,094	4,828,169	5,415,735	2,818,359	19.11	147,455	1.88%
Elkhart										
331.0	Structures & Improvements	1,175,286	1.02	1,198,792	581,202	651,932	546,860	13.33	41,025	3.49%
332.0	Reservoirs, Dams & Waterways	5,535,898	1.02	5,646,616	2,834,672	3,179,639	2,466,977	13.41	183,965	3.32%
333.0	Waterwheels, Turbines & Generators	826,739	1.02	843,274	458,767	514,597	328,677	13.21	24,881	3.01%
334.0	Accessory Electrical Equip.	628,236	1.02	640,801	339,295	380,586	260,215	13.07	19,909	3.17%
335.0	Misc. Power Plant Equip.	250,083	1.02	255,085	90,673	101,707	153,378	13.29	11,541	4.61%
	Total Elkhart	8,416,242	1.02	8,584,567	4,304,609	4,828,461	3,756,106	13.35	281,321	3.34%

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2016
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO. (I)	TITLE (II)	ORIGINAL COST (1) (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)
Twin Branch										
331.0	Structures & Improvements	560,996	1.04	583,436	331,605	371,960	211,476	19.14	11,049	1.97%
332.0	Reservoirs, Dams & Waterways	5,189,770	1.04	5,397,361	3,140,760	3,522,976	1,874,385	19.31	97,068	1.87%
333.0	Waterwheels, Turbines & Generators	6,104,818	1.04	6,349,011	3,421,648	3,838,047	2,510,964	18.89	132,926	2.18%
334.0	Accessory Electrical Equip.	1,666,771	1.04	1,733,442	1,004,278	1,126,494	606,948	18.61	32,614	1.96%
335.0	Misc. Power Plant Equip.	575,672	1.04	598,699	234,236	262,741	335,958	19.06	17,626	3.06%
	Total Twin Branch	14,098,027	1.04	14,661,948	8,132,527	9,122,218	5,539,730	19.02	291,283	2.07%
Constantine										
331.0	Structures & Improvements	331,658	1.26	417,889	174,764	196,032	221,857	35.23	6,297	1.90%
332.0	Reservoirs, Dams & Waterways	1,318,703	1.26	1,661,566	685,660	769,102	892,464	35.83	24,908	1.89%
333.0	Waterwheels, Turbines & Generators	797,622	1.26	1,005,004	453,744	508,963	496,041	34.37	14,432	1.81%
334.0	Accessory Electrical Equip.	408,410	1.26	514,597	200,936	225,389	289,208	33.37	8,667	2.12%
335.0	Misc. Power Plant Equip.	278,127	1.26	350,440	85,167	95,531	254,909	34.97	7,289	2.62%
	Total Constantine	3,134,520	1.26	3,949,495	1,600,271	1,795,017	2,154,478	34.98	61,594	1.97%
Mottville										
331.0	Structures & Improvements	509,065	1.04	529,428	310,698	348,509	180,919	16.24	11,140	2.19%
332.0	Reservoirs, Dams & Waterways	2,237,139	1.04	2,326,625	1,353,138	1,517,809	808,816	16.36	49,439	2.21%
333.0	Waterwheels, Turbines & Generators	610,964	1.04	635,403	401,769	450,662	184,741	16.06	11,503	1.88%
334.0	Accessory Electrical Equip.	630,345	1.04	655,559	391,240	438,852	216,707	15.86	13,664	2.17%
335.0	Misc. Power Plant Equip.	392,250	1.04	407,940	135,715	152,231	255,709	16.19	15,794	4.03%
336.0	Roads, Railroads & Bridges	875	1.04	910	687	771	139	16.18	9	0.98%
	Total Mottville	4,380,638	1.04	4,555,864	2,593,247	2,908,834	1,647,030	16.22	101,549	2.32%
Crew Service Center										
331.0	Structures & Improvements	417,303	1.04	433,995	255,985	287,137	146,858	35.23	4,169	1.00%
335.0	Misc. Power Plant Equip.	126,865	1.04	131,940	79,181	88,816	43,124	34.97	1,233	0.97%
	Total Crew Service Center	544,168	1.04	565,935	335,166	375,953	189,982	35.17	5,402	0.99%
Total Hydraulic Production Plant		**53,698,312**	**1.05**	**56,445,934**	**30,181,683**	**33,854,658**	**22,591,278**	**18.37**	**1,229,739**	**2.29%**
OTHER PRODUCTION PLANT										
Deer Creek Solar Facility										
344.0	Generators	6,124,832	1.03	6,308,577	473,143	243,242	6,065,335	18.50	327,856	5.35%
Olive Solar Facility										
341.0	Structures & Improvements	376,655	1.04	391,721	9,793	3,937	387,784	19.50	19,886	5.28%
344.0	Generators	11,183,888	1.04	11,631,244	290,781	148,053	11,483,191	19.50	588,882	5.27%
345.0	Accessory Electric Equip.	269,039	1.04	279,801	6,995	4,441	275,360	19.50	14,121	5.25%
346.0	Misc. Power Plant Equip.	215,231	1.04	223,840	5,596	1,913	221,927	19.50	11,381	5.29%
	Total Olive Solar Facility	12,044,813	1.04	12,526,606	313,165	158,344	12,368,262	19.50	634,270	5.27%
Twin Branch Solar Facility										
344.0	Generators	6,949,845	1.04	7,227,839	180,696	92,002	7,135,837	19.50	365,940	5.27%
Watervliet Facility										
341.0	Structures & Improvements	357,616	1.03	368,344	9,209	3,738	364,606	19.50	18,698	5.23%
344.0	Generators	11,088,099	1.03	11,420,742	285,519	146,785	11,273,957	19.50	578,152	5.21%
346.0	Misc. Power Plant Equip.	340,698	1.03	350,919	8,773	3,029	347,890	19.50	17,841	5.24%
	Total Watervliet Facility	11,786,413	1.03	12,140,005	303,501	153,552	11,986,453	19.50	614,690	5.22%
Total Other Production Plant		**36,905,903**	1.04	**38,203,027**	**1,270,505**	**647,140**	**37,555,887**	19.33	**1,942,756**	**5.26%**
Total Production Plant		**4,296,472,586**	**1.03**	**4,426,945,057**	**2,073,272,413**	**1,716,857,231**	**2,710,087,827**	**14.70**	**184,308,005**	**4.29%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2016
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO. (I)	ACCOUNT TITLE (II)	ORIGINAL COST (1) (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)
TRANSMISSION PLANT										
350.1	Land Rights	59,005,326	1.00	59,005,326	19,636,112	21,189,476	37,815,850	43.37	871,936	1.48%
352.0	Structures & Improvements	24,008,047	1.18	28,329,495	10,074,637	10,871,616	17,457,879	47.04	371,128	1.55%
353.0	Station Equipment	713,521,789	0.97	692,116,135	143,100,038	154,420,325	537,695,810	40.46	13,289,565	1.86%
354.0	Towers & Fixtures	233,328,402	1.20	279,994,082	156,712,707	169,109,857	110,884,225	28.18	3,934,855	1.69%
355.0	Poles & Fixtures	163,079,386	1.53	249,511,461	35,294,683	38,086,757	211,424,704	45.50	4,646,697	2.85%
356.0	OH Conductor & Devices	260,285,941	1.34	348,783,161	150,770,479	162,697,555	186,085,606	36.33	5,122,092	1.97%
357.0	Underground Conduit	2,312,343	1.00	2,312,343	1,098,501	1,185,401	1,126,942	26.25	42,931	1.86%
358.0	Underground Conductor	6,010,548	1.15	6,912,130	2,180,004	2,352,459	4,559,671	44.50	102,465	1.70%
359.0	Roads and Trails	347,294	1.00	347,294	81,453	87,897	259,397	49.76	5,213	1.50%
Total Transmission Plant		**1,461,899,076**	**1.14**	**1,667,311,427**	**518,948,614**	**560,001,343**	**1,107,310,084**	**39.01**	**28,386,882**	**1.94%**
DISTRIBUTION PLANT										
360.1	Land Rights	13,770,217	1.00	13,770,217	2,798,636	3,252,741	10,517,476	51.79	203,079	1.47%
361.0	Structures & Improvements	14,811,177	1.10	16,292,295	2,790,557	3,243,351	13,048,944	62.15	209,959	1.42%
362.0	Station Equipment	244,926,449	1.03	252,274,242	36,122,689	41,983,929	210,290,313	42.84	4,908,737	2.00%
363.0	Storage Battery Equipment	5,488,900	1.00	5,488,900	2,743,560	3,188,728	2,300,172	7.50	306,690	5.59%
364.0	Poles, Towers, & Fixtures	259,353,877	1.78	461,649,901	108,848,960	126,510,711	335,139,190	25.22	13,288,628	5.12%
365.0	Overhead Conductor & Devices	416,967,574	1.10	458,664,331	81,633,703	94,879,526	363,784,805	27.13	13,408,950	3.22%
366.0	Underground Conduit	86,716,318	1.00	86,716,318	18,879,086	21,942,392	64,773,926	41.46	1,562,323	1.80%
367.0	Underground Conductor	228,330,495	1.00	228,330,495	43,827,082	50,938,431	177,392,064	40.40	4,390,893	1.92%
368.0	Line Transformers	306,878,569	1.06	325,291,283	126,605,665	147,148,606	178,142,677	12.22	14,577,960	4.75%
369.0	Services	172,328,184	1.20	206,793,821	57,039,568	66,294,766	140,499,055	27.52	5,105,344	2.96%
370.0	Meters (2)	91,342,472	1.22	111,437,816	2,786,056	2,786,056	108,651,760	5.00	21,730,352	23.79%
371.0	Installations on Custs. Prem.	26,350,180	1.23	32,410,721	11,035,669	12,826,308	19,584,413	8.57	2,285,229	8.67%
373.0	Street Lighting & Signal Sys.	20,562,372	1.12	23,029,857	12,588,570	14,631,182	8,398,675	8.16	1,029,249	5.01%
Total Distribution Plant		**1,887,826,784**	**1.18**	**2,222,150,197**	**507,699,801**	**589,626,727**	**1,632,523,470**	**19.67**	**83,007,393**	**4.40%**
GENERAL PLANT										
390.0	Structures & Improvements	39,061,743	0.99	38,671,126	9,429,738	8,675,549	29,995,577	37.81	793,324	2.03%
391.0	Office Furniture & Equipment	6,993,750	0.95	6,644,063	3,257,080	2,996,579	3,647,484	11.22	325,088	4.65%
393.0	Stores Equipment	131,918	1.00	131,918	31,918	29,365	102,553	18.97	5,406	4.10%
394.0	Tools Shop & Garage Equipment	13,215,370	1.00	13,215,370	5,838,646	5,371,672	7,843,698	8.93	878,354	6.65%
395.0	Laboratory Equipment	395,858	0.99	391,899	210,446	193,615	198,284	9.26	21,413	5.41%
396.0	Power Operated Equipment	543,715	1.00	543,715	268,679	247,190	296,525	12.65	23,441	4.31%
397.0	Communication Equipment	43,321,533	1.00	43,321,533	11,891,533	10,940,449	32,381,084	19.59	1,652,939	3.82%
398.0	Miscellaneous Equipment	10,197,450	0.91	9,279,680	2,832,556	2,606,009	6,673,671	20.84	320,234	3.14%
Total General Plant		**113,861,337**	**0.99**	**112,199,304**	**33,760,596**	**31,060,428**	**81,138,876**	**20.18**	**4,020,198**	**3.53%**
	Total Depreciable Plant	**7,760,059,783**	**1.09**	**8,428,605,985**	**3,133,681,424**	**2,897,545,729**	**5,531,060,257**	**18.45**	**299,722,478**	**3.86%**

Notes:

(1) Production Plant includes 2017 forecasted plant additions totaling $156,089,819 for Steam Plant; $360,290,695 for Nuclear; and $3,462,967 for Hydro. Accumulated depreciation was also adjusted to add depreciation on the forecasted additions.

(2) Accumulated depreciation for Meter Account 370 is from I&M's unadjusted booked amount at December 31, 2017. The total adjustment for using Indiana depreciation rates versus the booked composite depreciation rates was allocated to Distribution accounts excluding meters to calculate a rate that will fully depreciate the existing meters over their expected 5 year life.

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, 2016

IN

ACCOUNT NO.	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	99,017,726	2.17%	2,148,685	6.72%	6,651,892	4,503,207
312.0	Boiler Plant Equipment	570,381,956	2.86%	16,312,924	7.66%	43,686,574	27,373,650
314.0	Turbogenerator Units	96,471,667	2.77%	2,672,265	7.23%	6,979,387	4,307,122
315.0	Accessory Electrical Equipment	61,506,149	1.97%	1,211,671	6.76%	4,155,350	2,943,679
316.0	Miscellaneous Power Plant Equipment	16,195,891	2.35%	380,603	7.17%	1,161,145	780,542
	Total Rockport Unit 1	843,573,389	2.69%	22,726,148	7.42%	62,634,348	39,908,200
Rockport ACI							
312.0	Boiler Plant Equipment	11,817,734	3.43%	405,348	5.62%	663,849	258,501
Rockport Unit 1 - DSI							
311.0	Structures & Improvements	2,904,445	10.00%	290,445	7.85%	227,960	(62,485)
312.0	Boiler Plant Equipment	46,248,904	10.00%	4,624,890	8.77%	4,057,691	(567,199)
	Total Rockport Unit 1 - DSI	49,153,349	10.00%	4,915,335	8.72%	4,285,650	(629,685)
Rockport Unit 2 Owned Assets							
311.0	Structures & Improvements	4,085,306	2.59%	105,809	3.45%	141,024	35,215
312.0	Boiler Plant Equipment	18,815,711	2.78%	523,077	3.76%	706,905	183,828
314.0	Turbogenerator Units	872,755	2.92%	25,484	3.98%	34,718	9,234
315.0	Accessory Electrical Equipment	2,097,030	2.79%	58,507	3.66%	76,762	18,255
316.0	Miscellaneous Power Plant Equipment	6,827,623	2.52%	172,056	3.36%	229,487	57,431
	Total Rockport Unit 2 Owned Assets	32,698,425	2.71%	884,933	3.64%	1,188,896	303,963
Rockport Unit 2 - DSI							
311.0	Structures & Improvements	499,764	10.00%	49,976	16.26%	81,239	31,263
312.0	Boiler Plant Equipment	50,863,781	10.00%	5,086,378	16.47%	8,377,680	3,291,302
	Total Rockport Unit 2 - DSI	51,363,545	10.00%	5,136,354	16.47%	8,458,920	3,322,566
	Total Rockport Plant	988,606,442	3.45%	34,068,118	7.81%	77,231,663	43,163,545
Total Steam Production Plant		**988,606,442**	**3.45%**	**34,068,118**	**7.81%**	**77,231,663**	**43,163,545**

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, 2016

IN

ACCOUNT NO.	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	82,332,758	1.01%	831,561	2.24%	1,845,208	1,013,647
322.0	Reactor Plant Equipment	680,859,321	1.85%	12,595,897	3.25%	22,127,722	9,531,825
323.0	Turbogenerator Units	283,222,648	2.48%	7,023,922	4.01%	11,358,138	4,334,216
324.0	Accessory Electrical Equipment	108,543,364	1.29%	1,400,209	2.79%	3,024,121	1,623,912
325.0	Miscellaneous Power Plant Equipment	35,791,947	2.63%	941,328	3.59%	1,283,461	342,133
	Total Cook Unit 1	1,190,750,038	1.91%	22,792,917	3.33%	39,638,651	16,845,734
Cook Unit 2							
321.0	Structures & Improvements	349,124,308	1.30%	4,538,616	2.56%	8,949,744	4,411,128
322.0	Reactor Plant Equipment	892,386,003	1.72%	15,349,039	3.01%	26,868,148	11,519,109
323.0	Turbogenerator Units	424,972,479	1.62%	6,884,554	4.10%	17,423,050	10,538,496
324.0	Accessory Electrical Equipment	151,555,144	1.49%	2,258,172	2.94%	4,461,840	2,203,668
325.0	Miscellaneous Power Plant Equipment	208,473,957	1.86%	3,877,616	3.15%	6,562,415	2,684,799
	Total Cook Unit 2	2,026,511,891	1.62%	32,907,997	3.17%	64,265,196	31,357,199
Total Nuclear Production Plant		**3,217,261,929**	**1.73%**	**55,700,914**	**3.23%**	**103,903,848**	**48,202,934**
HYDRAULIC PRODUCTION PLANT							
Berrien Springs							
331.0	Structures & Improvements	541,581	3.25%	17,601	2.57%	13,942	(3,659)
332.0	Reservoirs, Dams & Waterways	5,272,257	2.80%	147,623	1.89%	99,802	(47,821)
333.0	Waterwheels, Turbines & Generators	7,402,466	3.37%	249,463	2.41%	178,550	(70,913)
334.0	Accessory Electrical Equip.	1,251,525	3.16%	39,548	2.16%	26,992	(12,556)
335.0	Misc. Power Plant Equip.	814,894	3.47%	28,277	2.68%	21,849	(6,428)
	Total Berrien Springs	15,282,723	3.16%	482,512	2.23%	341,135	(141,377)
Buchanan							
331.0	Structures & Improvements	607,893	2.48%	15,076	2.86%	17,388	2,312
332.0	Reservoirs, Dams & Waterways	4,599,280	2.64%	121,421	1.72%	79,287	(42,134)
333.0	Waterwheels, Turbines & Generators	1,321,201	2.72%	35,937	1.72%	22,660	(13,277)
334.0	Accessory Electrical Equip.	1,043,491	3.06%	31,931	2.02%	21,108	(10,823)
335.0	Misc. Power Plant Equip.	270,129	3.42%	9,238	2.60%	7,012	(2,226)
	Total Buchanan	7,841,994	2.72%	213,603	1.88%	147,455	(66,148)

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, 2016

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)
Elkhart							
331.0	Structures & Improvements	1,175,286	3.50%	41,135	3.49%	41,025	(110)
332.0	Reservoirs, Dams & Waterways	5,535,898	3.25%	179,917	3.32%	183,965	4,048
333.0	Waterwheels, Turbines & Generators	826,739	2.77%	22,901	3.01%	24,881	1,980
334.0	Accessory Electrical Equip.	628,236	3.03%	19,036	3.17%	19,909	873
335.0	Misc. Power Plant Equip.	250,083	5.05%	12,629	4.61%	11,541	(1,088)
	Total Elkhart	8,416,242	3.27%	275,618	3.34%	281,321	5,703
Twin Branch							
331.0	Structures & Improvements	560,996	2.66%	14,922	1.97%	11,049	(3,873)
332.0	Reservoirs, Dams & Waterways	5,189,770	2.25%	116,770	1.87%	97,068	(19,702)
333.0	Waterwheels, Turbines & Generators	6,104,818	3.12%	190,470	2.18%	132,926	(57,544)
334.0	Accessory Electrical Equip.	1,666,771	3.01%	50,170	1.96%	32,614	(17,556)
335.0	Misc. Power Plant Equip.	575,672	3.58%	20,609	3.06%	17,626	(2,983)
	Total Twin Branch	14,098,027	2.79%	392,941	2.07%	291,283	(101,658)
Constantine							
331.0	Structures & Improvements	331,658	3.85%	12,769	1.90%	6,297	(6,472)
332.0	Reservoirs, Dams & Waterways	1,318,703	3.56%	46,946	1.89%	24,908	(22,038)
333.0	Waterwheels, Turbines & Generators	797,622	3.81%	30,389	1.81%	14,432	(15,957)
334.0	Accessory Electrical Equip.	408,410	4.61%	18,828	2.12%	8,667	(10,161)
335.0	Misc. Power Plant Equip.	278,127	5.82%	16,187	2.62%	7,289	(8,898)
	Total Constantine	3,134,520	3.99%	125,119	1.97%	61,594	(63,525)
Mottville							
331.0	Structures & Improvements	509,065	3.04%	15,476	2.19%	11,140	(4,336)
332.0	Reservoirs, Dams & Waterways	2,237,139	2.56%	57,271	2.21%	49,439	(7,832)
333.0	Waterwheels, Turbines & Generators	610,964	2.82%	17,229	1.88%	11,503	(5,726)
334.0	Accessory Electrical Equip.	630,345	3.34%	21,054	2.17%	13,664	(7,390)
335.0	Misc. Power Plant Equip.	392,250	4.13%	16,200	4.03%	15,794	(406)
336.0	Roads, Railroads & Bridges	875	2.11%	18	0.98%	9	(9)
	Total Mottville	4,380,638	2.90%	127,248	2.32%	101,549	(25,699)
Crew Service Center							
331.0	Structures & Improvements	417,303	2.03%	8,471	1.00%	4,169	(4,302)
335.0	Misc. Power Plant Equip.	126,865	2.00%	2,537	0.97%	1,233	(1,304)
	Total Crew Service Center	544,168	2.02%	11,008	0.99%	5,402	(5,606)
Total Hydraulic Production Plant		**53,698,312**	**3.03%**	**1,628,049**	**2.29%**	**1,229,739**	**(398,310)**

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, 2016

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OTHER PRODUCTION PLANT							
Deer Creek Solar Facility							
344.0	Generators	6,124,832	5.00%	306,242	5.35%	327,856	21,614
Olive Solar Facility							
341.0	Structures & Improvements	376,655	5.00%	18,833	5.28%	19,886	1,053
344.0	Generators	11,183,888	5.00%	559,194	5.27%	588,882	29,688
345.0	Accessory Electric Equip.	269,039	5.00%	13,452	5.25%	14,121	669
346.0	Misc. Power Plant Equip.	215,231	5.00%	10,762	5.29%	11,381	619
	Total Olive Solar Facility	12,044,813	5.00%	602,241	5.27%	634,270	32,029
Twin Branch Solar Facility							
344.0	Generators	6,949,845	5.00%	347,492	5.27%	365,940	18,448
Watervliet Facility							
341.0	Structures & Improvements	357,616	5.00%	17,881	5.23%	18,698	817
344.0	Generators	11,088,099	5.00%	554,405	5.21%	578,152	23,747
346.0	Misc. Power Plant Equip.	340,698	5.00%	17,035	5.24%	17,841	806
	Total Watervliet Facility	11,786,413	5.00%	589,321	5.22%	614,690	25,369
Total Other Production Plant		**36,905,903**	**5.00%**	**1,845,296**	**5.26%**	**1,942,756**	**97,460**
Total Production Plant		**4,296,472,586**	**2.17%**	**93,242,377**	**4.29%**	**184,308,005**	**91,065,628**
TRANSMISSION PLANT							
350.1	Land Rights	59,005,326	1.27%	749,368	1.48%	871,936	122,568
352.0	Structures & Improvements	24,008,047	1.32%	316,906	1.55%	371,128	54,222
353.0	Station Equipment	713,521,789	1.69%	12,058,518	1.86%	13,289,565	1,231,047
354.0	Towers & Fixtures	233,328,402	1.60%	3,733,254	1.69%	3,934,855	201,601
355.0	Poles & Fixtures	163,079,386	2.43%	3,962,829	2.85%	4,646,697	683,868
356.0	OH Conductor & Devices	260,285,941	1.53%	3,982,375	1.97%	5,122,092	1,139,717
357.0	Underground Conduit	2,312,343	1.56%	36,073	1.86%	42,931	6,858
358.0	Underground Conductor	6,010,548	1.55%	93,163	1.70%	102,465	9,302
359.0	Roads and Trails	347,294	1.49%	5,175	1.50%	5,213	38
Total Transmission Plant		**1,461,899,076**	**1.71%**	**24,937,661**	**1.94%**	**28,386,882**	**3,449,221**

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, 2016

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DISTRIBUTION PLANT							
360.1	Land Rights	13,770,217	1.43%	196,914	1.47%	203,079	6,165
361.0	Structures & Improvements	14,811,177	1.48%	219,205	1.42%	209,959	(9,246)
362.0	Station Equipment	244,926,449	1.94%	4,751,573	2.00%	4,908,737	157,164
363.0	Storage Battery Equipment	5,488,900	6.48%	355,681	5.59%	306,690	(48,991)
364.0	Poles, Towers, & Fixtures	259,353,877	3.98%	10,322,284	5.12%	13,288,628	2,966,344
365.0	Overhead Conductor & Devices	416,967,574	2.51%	10,465,886	3.22%	13,408,950	2,943,064
366.0	Underground Conduit	86,716,318	1.70%	1,474,177	1.80%	1,562,323	88,146
367.0	Underground Conductor	228,330,495	2.30%	5,251,601	1.92%	4,390,893	(860,708)
368.0	Line Transformers	306,878,569	3.05%	9,359,796	4.75%	14,577,960	5,218,164
369.0	Services	172,328,184	2.42%	4,170,342	2.96%	5,105,344	935,002
370.0	Meters	91,342,472	4.00%	3,653,699	23.79%	21,730,352	18,076,653
371.0	Installations on Custs. Prem.	26,350,180	6.78%	1,786,542	8.67%	2,285,229	498,687
373.0	Street Lighting & Signal Sys.	20,562,372	3.63%	746,414	5.01%	1,029,249	282,835
Total Distribution Plant		**1,887,826,784**	**2.79%**	**52,754,114**	**4.40%**	**83,007,393**	**30,253,279**
GENERAL PLANT							
390.0	Structures & Improvements	39,061,743	1.90%	742,173	2.03%	793,324	51,151
391.0	Office Furniture & Equipment	6,993,750	4.19%	293,038	4.65%	325,088	32,050
393.0	Stores Equipment	131,918	7.11%	9,379	4.10%	5,406	(3,973)
394.0	Tools Shop & Garage Equipment	13,215,370	6.22%	821,996	6.65%	878,354	56,358
395.0	Laboratory Equipment	395,858	4.91%	19,437	5.41%	21,413	1,976
396.0	Power Operated Equipment	543,715	3.99%	21,694	4.31%	23,441	1,747
397.0	Communication Equipment	43,321,533	3.16%	1,368,960	3.82%	1,652,939	283,979
398.0	Miscellaneous Equipment	10,197,450	2.93%	298,785	3.14%	320,234	21,449
Total General Plant		**113,861,337**	**3.14%**	**3,575,462**	**3.53%**	**4,020,198**	**444,736**
	Total Depreciable Plant	**7,760,059,783**	**2.25%**	**174,509,614**	**3.86%**	**299,722,478**	**125,212,864**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE III - COMPARISON OF MORTALITY CHARACTERISTICS
DEPRECIATION STUDY AS OF DECEMBER 31, 2016

(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	75	R4.0	5%	15%	-10%	73	R3.5	0%	18%	-18%
353.0	Station Equipment	50	R1.0	32%	22%	10%	51	L0.5	23%	20%	3%
354.0	Towers & Fixtures	59	R5.0	12%	32%	-20%	64	R5.0	5%	25%	-20%
355.0	Poles & Fixtures	57	R1.0	10%	54%	-44%	53	L0.5	9%	62%	-53%
356.0	OH Cond. & Devices	65	R3.0	26%	39%	-13%	64	R4.0	18%	52%	-34%
357.0	Underground Conduit	50	L5.0	0%	0%	0%	50	L5.0	0%	0%	0%
358.0	Underground Conductor and Devices	60	R3.0	2%	9%	-7%	65	L2.5	2%	32%	-30%
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	70	R2.0	4%	16%	-12%	75	R2.0	3%	13%	-10%
362.0	Station Equipment	50	L0.0	16%	17%	-1%	50	L0.0	16%	19%	-3%
364.0	Poles, Towers, & Fixtures	38	R0.5	23%	86%	-63%	33	L0.0	21%	99%	-78%
365.0	Overhead Conductor & Devices	40	R0.5	26%	31%	-5%	33	L0.0	23%	33%	-10%
366.0	Underground Conduit	55	R2.5	0%	0%	0%	53	R2.0	0%	0%	0%
367.0	Underground Conductor	40	R2.0	0%	0%	0%	50	R1.0	0%	0%	0%
368.0	Line Transformers	30	R1.5	20%	23%	-3%	20	R0.5	19%	25%	-6%
369.0	Services	45	R0.5	4%	21%	-17%	38	R0.5	4%	24%	-20%
370.0	Meters	25	S5.0	9%	31%	-22%	5	SQ	10%	32%	-22%
371.0	Installations on Custs. Prem.	16	L0.0	3%	23%	-20%	13	L0.0	3%	26%	-23%
373.0	Street Lighting & Signal Sys.	25	R0.5	9%	16%	-7%	18	R0.5	8%	20%	-12%
GENERAL PLANT											
390.0	Structures & Improvements	45	S1.5	20%	6%	14%	50	L0.5	15%	14%	1%
391.0	Office Furniture & Equipment	22	SQ	14%	7%	7%	22	SQ	10%	5%	5%
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	19%	5%	14%	27	SQ	7%	7%	0%
398.0	Miscellaneous Equipment	30	SQ	29%	17%	12%	30	SQ	27%	18%	9%

INDIANA MICHIGAN POWER COMPANY
SCHEDULE IV - ESTIMATED GENERATION PLANT RETIREMENT DATES
DEPRECIATION STUDY AS OF DECEMBER 31, 2016

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					
Deer Creek Solar Facility (c)	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 has current plans to file 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.

Rockport Plant Unit 1

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	01/25/16	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 Rockport Plant located near Rockport, Indiana is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of two generating units with a generating capacity of 1,300 megawatts each. Unit 1 was placed in operation in 1984 and Unit 2 in 1989.

Sargent & Lundy (S&L) previously prepared a Conceptual Demolition Cost Estimate for Rockport Plant Unit 1 in February, 2011 (Cost Estimate No. 13791-6, 2/15/2011). AEP recently contracted S&L to update the previously prepared cost estimate taking into consideration specific scope additions/deletions and updating pricing to 4th Quarter 2015 levels. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimate is to determine the gross demolition costs for Rockport Plant Unit 1 (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. 33962B, dated February 10, 2016, was prepared and is included as Exhibit 1. The demolition cost applies to Unit 1 and one-half of the plant common facilities. 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 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary

Description	Total Cost
Demolition Cost	$72,559,096
Scrap Value	($13,553,935)
Direct Cost Subtotal	$59,005,161
Indirect Cost	$7,256,000
Contingency Cost	$17,996,000
Escalation Cost	$0
Total Project Cost	$84,257,161

Asbestos Removal Conceptual Cost Estimate No. 33963B, dated February 10, 2016, was prepared and is included as Exhibit 2. The total estimated cost for asbestos removal prior to plant dismantlement is $447,366. Quantities were derived from drawings and past experience. Asbestos removal applies to Unit 1 and the complete plant common facilities. The cost of asbestos removal is excluded from the total conceptual demolition cost estimate in Table 2-2 above.

3.0 TECHNICAL BASIS

The scope of dismantlement includes the complete Rockport Plant Unit 1 generating facility and plant common services associated with Unit 1. As defined previously one-half of the cost of the plant common facilities was allocated to the Unit 1 conceptual demolition cost estimate. Common facilities include:

Ohio River barge unloading facilities and docking river cells, coal handling, storm water ponds and river water intake structure and piping to the facility.

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

- Bottom Ash and Fly Ash retention and disposal ponds
- Asbestos removal (separate cost estimate prepared)
- Switchyard

The following scope revisions were included in the current cost estimate:

- Unit 1 SCR System (currently under construction)
- Unit 1 DSI System
- Three (3) Storm Water Ponds constructed since the last demolition cost estimate was prepared.
- Quantity of Condenser Tubing was updated based on the installation drawings received.
- Condensate Storage Tank material was updated to stainless steel.
- Chimney demolition changed to explosive demolition from top down dismantlement at a reduced cost.
- New method of river cell demolition increased cost due to Army Corp of Engineers requirement to remove the cells completely (sheet piling and fill).
- Reduced the volume demolition man-hour rate for building demolition to our current rates.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with AEP corporate and plant personnel. The facility review was held on Wednesday December 9, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimate prepared for the Rockport Plant is a conceptual estimate of the cost to dismantle Rockport Plant Unit 1 and Unit 1's share of the common facilities (defined by AEP as ½ of the total cost of the plant common facilities). 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, (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 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 plant and associated abatement, followed by the demolition work and site restoration.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in this cost estimate were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the site plot plan and other drawings and data provided by Plant Personnel, 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 Evansville, 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.

- Unit 2 will be demolished at the same time as Unit 1 and the shared facilities. Therefore no provisions are made to keep Unit 2 in operation.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.
- All coal and fuel oil will be consumed prior to demolition.
- All electrical equipment and wiring is de-energized prior to start of dismantlement.
- No extraordinary environmental costs for demolition have been included.

- PCB'**s** are not present on site.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- Ash Ponds and associated Wastewater, Clearwater and Reclaim ponds are not included. These costs will be determined by the Owner.
- The method of chimney demolition was revised from a careful "top down" demolition method to a "gross" demolition method which involves toppling the chimney and demolishing it on the ground. This method was chosen since no significant structures will be remaining on-site within a "1100 feet of the chimney fall radius" during a whole plant demolition.
- 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 items above grade and to a depth of 2 foot will be demolished. Any other items buried more than 2 foot will remain in place. All foundations are removed and buried on site with the exception of power block thick mat foundations at grade. These will have 2 feet of soil placed over them and will be graded into the surrounding area.
- Underground piping, conduit and cable ducts will be abandoned in place.
- Underground piping larger than 4 feet diameter will be filled with sand or slurry and capped at the ends to prevent collapse. Non-metal pipe will be collapsed.
- 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.
- Disturbed areas will be buried under 2 feet of topsoil mulched and seeded with grass – no other landscaping is included.
- All borrow material is assumed to be purchased from nearby (average 10 mile round trip) off-site sources.
- Debris not suitable for burial is to be disposed of off-site. Assumed distance to final disposal is within a 5 mile haul.

5.0 REFERENCES

Drawings utilized in the preparation of this conceptual demolition cost estimate are identified in Table 5-1.

Table 5-1
Reference Drawings

Unit	Document Number	Revision	Title
0	12-3750-6	6	General Site Arrangement
0	12-3751-4	4	General Site Arrangement
0	12-16001A	----	Coal Handling General Arrangement Plan
0	12-6002-1	1	Coal Handling General Arrangement Plan
0	12-5030-11	11	Plot Plan (2) 1300 MW Units
1	12-50700B-B	B	SCR Retrofit Project, Unit 1 South Plot Plan
1	12-50700A-B	B	SCR Retrofit Project, Unit 1 SCR Island Plat Plan
1	12-507000-B	B	SCR Retrofit Project, Unit 1 Overall Site Plot Plan
1	1-509000-0	C	SCR General Arrangement, Elevation View A-A Looking South
1	1-509001-0	D	SCR General Arrangement, Elevation View B-B Looking West
1	1-509002-0	D	SCR General Arrangement, Elevation View C-C Looking West
1	1-509003-0	D	SCR General Arrangement, Elevation View D-D Looking West
1	1-509004-0	D	SCR General Arrangement, Elevation View E-E Looking East
1	1-509005-0	D	SCR General Arrangement, Sectional Plan View F-F Platform at EL 329'8"
1	10509006-0	D	SCR General Arrangement, Sectional Plan View G-G Platform at EL 316'8"
1	10509007-0	D	SCR General Arrangement, Sectional Plan View H-H Plat. at EL 305'2"
1	10509008-0	D	SCR General Arrangement, Sectional Plan View J-J Plat. at EL 275' 3 1/2"
1	10509009-0	D	SCR General Arrangement, Sectional Plan View K-K Plat. at EL 257' 9"
1	10509010-0	D	SCR General Arrangement, Sectional Plan View L-L Plat. at EL 238' 3 1/2"
1	10509011-0	D	SCR General Arrangement, Sectional Plan View M-M Plat. at EL 234' to 220'-11 3/8"
1	10509012-0	D	SCR General Arrangement, Sectional Plan View N-N Plat. at EL 212'-6"
1	10509013-0	D	SCR General Arrangement, Sectional Plan View P-P Plat. at EL 171'
0	100DPI		Rockport Station Drainage
			Used for Asbestos Removal Estimate
0	2012-25134	B	Firewall Block ad Filler Pack Install Natural Draft Counter-flow Tower
0	1-12003-3	3	600V Auxiliary One Line Diagram
0	1-12018-0		600V Auxiliary One Line Diagram, Vacuum Pump Houses No.1 and No. 1-2

Unit	Document Number	Revision	Title
0	12-12012-3	3	Coal Handling 600V Auxiliary One Line Diagram
0	12-12012-4	4	Coal Handling 600V Auxiliary One Line Diagram

0 = Common

1 = Unit 1

2 = Unit 2

Rockport Plant Unit 1
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

EXHIBIT 1
Rockport Plant Unit 1
Conceptual Demolition Cost Estimate No. 33962B

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INEVN
Project No.	13465-000
Station Name	ROCKPORT
Unit	1 & 1/2 PLANT COMMON
Estimate Date	02/10/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33962B
Estimate Class	CONCEPTUAL
Cost index	INEVN

Estimate No.: 33962B
Project No.: 13465-000
Estimate Date: 02/10/2016
Prep./Rev/App.: RCK/ADC/MNO

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Group	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
10.00.00	UNIT 1 & 1/2 OF COMMON DEMOLITION	100,000		23,507,230	456,097	48,412,157	72,019,387
18.00.00	SCRAP VALUE		(13,553,935)				(13,553,935)
21.00.00	CIVIL WORK			311,406	2,895	228,304	539,710
	TOTAL DIRECT COST	100,000	(13,553,935)	23,818,636	458,992	48,640,460	59,005,162

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	48,640,460		458,992
Material	23,818,636		
Subcontract	100,000		
Scrap Value	(13,553,935)		
	59,005,161	**59,005,161**	
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			
		59,005,161	
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	7,256,000		
93-8 EPC Fee			
	7,256,000	**66,261,161**	
Contingency:			
94-1 Contingency on Material	4,764,000		
94-2 Contingency on Labor	9,728,000		
94-3 Contingency on Sub.	20,000		
94-6 Contingency on Scrap	2,033,000		
94-5 Contingency on Indirect	1,451,000		
	17,996,000	**84,257,161**	
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			
		84,257,161	
Total		***84,257,161***	

Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Crew Rate	Labor Cost	Total Cost
10.00.00		**UNIT 1 & 1/2 OF COMMON DEMOLITION**									
	10.21.00	**CIVIL WORK**									
		FILL	FILL RETENTION PONDS 1 & 2 TO GRADE, 4.25 ACRE, 10 FT AVERAGE DEPTH, 1/2 OF COMMON	46,384.00 CY	-	-	1,205,984	1,786	187.65 /MH	335,136	1,541,120
		FILL	1/2 OF FILL NORTH STORMWATER POND TO GRADE, 490' X 670'X20' DEEP	121,593.00 CY	-	-	3,161,418	4,682	187.65 /MH	878,540	4,039,958
		FILL	1/2 OF FILL WEST STORMWATER POND TO GRADE, 230' X 320'X20' DEEP	27,260.00 CY	-	-	708,760	1,050	187.65 /MH	196,960	905,720
		FILL	1/2 OF FILL SOUTHWEST STORMWATER POND TO GRADE, 235' X 578'X20' DEEP	50,308.00 CY	-	-	1,308,008	1,937	187.65 /MH	363,488	1,671,496
		COVERED DISTURBED AREAS OF SITE W/2 FT TOPSOIL	OFFSITE SOURCE, 10 MILES ROUND TRIP, 204 ACRES X 2 FT	658,240.00 CY	-	-	17,114,240	25,345	187.65 /MH	4,755,947	21,870,187
		RAILROAD TRACK	ASSUME 110 LB RAIL, 1/2 OF COMMON, 24,371 LF	12,186.00 TF	-			4,022	113.68 /MH	457,196	457,196
		PAVED SURFACES	1/2 OF COMMON, 88,000 SY	44,000.00 SY	-	-		8,713	113.68 /MH	990,479	990,479
		DEMOLITION - MISC. GRAVEL ROADS	1/2 OF COMMON, 40,486 LF	20,243.00 LF	-	-		891	122.82 /MH	109,406	109,406
		PULL SHEET PILE AND CAP FOR 30 FT BARGE ANCHOR CELL + 15 FT BARGE CELLS = 4000 TNS X 1/2 FOR COMMON = 2000 TN PER AEP	UPDATED, 29 OF 58 RIVER CELLS, INCLUDES FILLER REMOVAL.	2,000.00 TN	-	-		14,851	122.82 /MH	1,824,059	1,824,059
		CIVIL WORK					**23,498,410**	**63,276**		**9,911,211**	**33,409,621**
	10.22.00	**CONCRETE**									
		EQUIPMENT/ BUILDING FOUNDATION	LOADING DOCKS, COMMON 1/2 OF 1,705 CY	853.00 CY	-	-		1,056	85.21 /MH	89,956	89,956
		EQUIPMENT/ BUILDING FOUNDATION	MISC EQUIPMENT PADS AND SITE BUILDING FOUNDATION, 1/2 OF 15,842 CY COMMON	7,921.00 CY	-	-		9,803	85.21 /MH	835,332	835,332
		EQUIPMENT/ BUILDING FOUNDATION	TANK FOUNDATIONS, 1/2 OF 2,882 CY COMMON	1,441.00 CY	-	-		1,783	85.21 /MH	151,965	151,965
		EQUIPMENT/ BUILDING FOUNDATION	PILE CAP FOR 30 FT BARGE ANCHOR CELL, 524 CY X 1/2 FOR COMMON	262.00 CY	-	-		810	85.21 /MH	69,014	69,014
		EQUIPMENT/ BUILDING FOUNDATION	PILE CAP FOR 15 FT BARGE CELLS, 1,551 CY X 1/2 FOR COMMON	776.00 CY	-	-		2,399	85.21 /MH	204,407	204,407
		EQUIPMENT/ BUILDING FOUNDATION	MATERIAL HANDLING BUILDINGS & TOWERS, 1/2 OF 7,000 CY	3,550.00 CY	-	-		4,394	85.21 /MH	374,376	374,376
		EQUIPMENT/ BUILDING FOUNDATION	2 U1 ASH SILOS 40 FT DIA X 151 FT HIGH	2,500.00 CY	-	-		3,094	85.21 /MH	263,645	263,645
		EQUIPMENT/ BUILDING FOUNDATION	FIREWALLS, COMMON 1/2 OF 450 CY	225.00 CY	-	-		278	85.21 /MH	23,728	23,728
		EQUIPMENT/ BUILDING FOUNDATION	U1 & 2 RIVER WATER MAKEUP PUMP HOUSES, 2,050 CY X 1/2 FOR COMMON	1,025.00 CY	-	-		1,269	85.21 /MH	108,094	108,094
		EQUIPMENT/ BUILDING FOUNDATION	U1 DSI SYSTEM SILOS AND EQUIPMENT	778.00 CY	-	-		963	85.21 /MH	82,046	82,046
		MAIN POWER BLOCK FOUNDATION	BURIED, NOT REMOVED	0.00 CY	-	-			85.21 /MH		
		TURBINE PEDESTAL FOUNDATION	U1 TURBINE PEDESTAL	6,000.00 CY	-	-		11,881	85.21 /MH	1,012,396	1,012,396
		DEMOLITION, CONCRETE	U1 CONCRETE COOLING TOWER SHELL/PRECAST	20,300.00 CY	-	-		55,831	122.82 /MH	6,857,112	6,857,112
		DEMOLITION, CONCRETE	U1 CONCRETE COOLING TOWER BASIN TO 2 FT BELOW GRADE	3,000.00 CY	-	-		2,792	122.82 /MH	342,923	342,923
		DEMOLITION, CONCRETE	PUG INTAKE PIPE U1 RIVER INTAKE 36 IN DIA X 120 FT	126.00 CY	-	-	8,820	208	122.82 /MH	25,537	34,357
		DEMOLITION, CONCRETE	CONCRETE U1 DSI SILOS (2)	45.00 CY	-	-		124	122.82 /MH	15,201	15,201
		DEMOLITION, CONCRETE	CONCRETE U1 SCR FOUNDATION,	2,963.00 CY	-	-		3,667	122.82 /MH	450,391	450,391
		CONCRETE					**8,820**	**100,351**		**10,906,121**	**10,914,941**
	10.24.00	**ARCHITECTURAL**									
		MAIN POWER BLOCK, UNIT 1		22,580,400.00 CF	-	-		96,880	89.78 /MH	8,697,851	8,697,851
		MATERIAL HANDLING BUILDINGS AND TOWERS	PREFAB, 1/2 OF 2,018,450 CF (INCLUDES TRACTOR SHEDS AND STATIONS)	1,009,225.00 CF	-	-		4,330	89.78 /MH	388,748	388,748
		WAREHOUSES AND STOREROOMS	PREFAB, 1/2 OF 2,095,920 CF COMMON STRUCTURES	1,047,960.00 CF	-	-		4,496	89.78 /MH	403,669	403,669
		MISCELLANEOUS SMALL BUILDINGS	PREFAB 1/2 OF 186,900 CF COMMON STRUCTURES	93,450.00 CF	-	-		401	89.78 /MH	35,996	35,996
		ENERGY INFORMATION CENTER	1/2 OF 84,450 CF COMMON STRUCTURE	42,225.00 CF	-	-		181	89.78 /MH	16,265	16,265
		PREFAB DIESEL GENERATOR CONTROL BUILDING	1/2 OF 42,700 CF COMMON STRUCTURE	21,350.00 CF	-	-		92	89.78 /MH	8,224	8,224
		PRETREATMENT BUILDING	1/2 OF 804,024 CF COMMON STRUCTURE	402,012.00 CF	-	-		1,725	89.78 /MH	154,853	154,853
		SERVICE BUILDING	1/2 OF 897,345 CF COMMON STRUCTURE	448,672.00 CF	-	-		1,925	89.78 /MH	172,826	172,826
		U 1 & 2 RIVER WATER MAKEUP PUMP HOUSES	1/2 OF 324,800 CF COMMON STRUCTURE	162,400.00 CF	-	-		697	89.78 /MH	62,556	62,556
		U1 PRECIPITATOR CONTROL BUILDING		239,200.00 CF	-	-		1,026	89.78 /MH	92,139	92,139
		U1 VACUUM PUMP HOUSE		141,725.00 CF	-	-		608	89.78 /MH	54,592	54,592
		ARCHITECTURAL						**112,360**		**10,087,718**	**10,087,718**
	10.25.00	**CONCRETE CHIMNEY & STACK**									
		CONCRETE CHIMNEY COMMON TO BOTH UNITS	1/2 EXPLOSIVE DEMOLITION, OF CHIMNEY	7,800.00 CY	-	-		9,653	85.21 /MH	822,572	822,572

Estimate No.: 33962B
Project No.: 13465-000
Estimate Date: 02/10/2016
Prep/Rev/Appr: RCK/ADC/MNO

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Sargent & Lundy

Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Crew Rate	Labor Cost	Total Cost
		CONCRETE CHIMNEY & STACK						9,653		822,572	822,572
	10.31.00	MECHANICAL EQUIPMENT									
		MAIN BOILER AND APPURTENANCES	U1 BOILERS AND EQUIPMENT INCLUDING DRAFT EQUIPMENT	22,616.00 TN	-			99,520	83.69 /MH	8,328,858	8,328,858
		FUEL OIL TANKS	1/2 OF (2) 2,000,000 GALLON, 100 FT DIA X 40 FT TALL, 190 TN EACH, COMMON THEREFORE 1/2 OF TOTAL	190.00 TN	-			423	122.82 /MH	51,986	51,986
		CHEMICAL FLUSH HOLDING TANK	1/2 OF 1,500,000 GALLON, 60 FT DIA X 60 FT TALL, 136 T, 1/2 FOR COMMON	68.00 TN	-			151	122.82 /MH	18,605	18,605
		U1 CLEAN CONDENSATE STORAGE TANK (STAINLESS STEEL)	UNIT 1, 1,500,000 GALLON, 60 FT DIA X 60 FT TALL, 136 TN	119.00 TN	-			265	122.82 /MH	32,559	32,559
		U1 CONTAMINATED CONDENSATE STORAGE TANK	UNIT 1, 1,000,000 GALLON, 60 FT DIA X 40 FT TALL, 79 TN	79.00 TN	-			176	122.82 /MH	21,615	21,615
		MISCELLANEOUS TANKS	REMAINDER OF UNIT 1 AND 1/2 OF COMMON TANKS	160.00 TN	-			356	122.82 /MH	43,777	43,777
		TURBINE GENERATOR	UNIT 1	2,020.00 TN	-			8,889	82.70 /MH	735,111	735,111
		TURBINE ROOM BRIDGE CRANE	UNIT 1	20.00 TN	-			45	122.82 /MH	5,472	5,472
		MISCELLANEOUS PLANT EQUIPMENT		2,480.00 TN	-			5,525	122.82 /MH	678,550	678,550
		CONDENSER & ACCESSORIES	INCLUDED IN MISC PLANT EQUIPMENT	0.00 TN	-				122.82 /MH		
		U1 ELECTROSTATIC PRECIPITATORS		12,644.00 TN	-			28,167	122.82 /MH	3,459,511	3,459,511
		U1 CIRCULATING WATER PUMPS		350.00 TN	-			780	122.82 /MH	95,763	95,763
		U1 DSI EQUIPMENT INCLUDING HOPPERS		54.00 TN	-			120	122.82 /MH	14,775	14,775
		U1 SCR	EQUIPMENT DUCTWORK AND STRUCTURE	4,651.00 TN	-			10,361	122.82 /MH	1,272,555	1,272,555
		MECHANICAL EQUIPMENT						154,779		14,759,139	14,759,139
	10.33.00	MATERIAL HANDLING EQUIPMENT									
		CONVEYORS BENT AND TRUSSES	3500 TN, 1/2 FOR COMMON	1,750.00 TN	-			5,776	122.82 /MH	709,356	709,356
		PULVERIZED FUEL EQUIPMENT	INCLUDED IN BOILERS AND EQUIPMENT ABOVE	0.00 TN	-				122.82 /MH		
		(2) BARGE UNLOADERS	4000 TN/HR MAX, 800 TN, 1/2 FOR COMMON, WORKED OF OF BARGES USING CRFANES	400.00 TN	-			4,400	122.82 /MH	540,462	540,462
		MATERIAL HANDLING EQUIPMENT						10,176		1,249,818	1,249,818
	10.35.00	PIPING									
		PIPING		5,000.00 TN	-			5,501	122.82 /MH	675,578	675,578
		PIPING						5,501		675,578	675,578
	10.37.00	ASBESTOS/PCB REMOVAL									
		ASBESTOS/ PCB REMOVAL	NO PCBs ONSITE - ASBESTOS IS ADDRESSED IN ANOTHER ESTIMATE	0.00 TN	-				122.82 /MH		
	10.86.00	WASTE									
		WASTE - ORGANIC & MISC WASTE		1.00 LS	100,000	-			122.82 /MH		100,000
		WASTE			100,000						100,000
		UNIT 1 & 1/2 OF COMMON DEMOLITION			**100,000**		**23,507,230**	**456,097**		**48,412,157**	**72,019,387**
18.00.00		**SCRAP VALUE**									
	18.10.00	MIXED STEEL									
		MIXED STEEL	1/2 OF PULL SHEET PILE AND CAP FOR 30 FT BARGE ANCHOR CELL + 15 FT BARGE CELLS = 2000 TNS X 1/2 FOR COMMON = 1000 TN PER AEP	-2,000.00 TN	-	(236,160)	-		77.78 /MH		(236,160)
		MIXED STEEL	UNIT 1 STRUCTURE, 1.25 LB/CF LABOR WITH SUBSTRUCTURE	-14,113.00 TN	-	(1,666,463)	-		77.78 /MH		(1,666,463)
		MIXED STEEL	1/2 OF CHIMNEY LINER, LABOR WITH CHIMNEY	-662.50 TN	-	(78,228)	-		77.78 /MH		(78,228)
		MIXED STEEL	FLUES & DUCTS, UNIT 1	-3,578.00 TN	-	(422,490)	-		77.78 /MH		(422,490)
		MIXED STEEL	U1 MAIN BOILER AND APPURTENANCES	-22,616.00 TN	-	(2,670,497)	-		77.78 /MH		(2,670,497)
		MIXED STEEL	TURBINE ROOM BRIDGE CRANE	-20.00 TN	-	(2,362)	-		77.78 /MH		(2,362)
		MIXED STEEL	MISCELLANEOUS PLANT EQUIPMENT	-2,480.00 TN	-	(292,838)	-		77.78 /MH		(292,838)
		MIXED STEEL	ELECTROSTATIC PRECIPITATORS	-12,644.00 TN	-	(1,493,004)	-		77.78 /MH		(1,493,004)
		MIXED STEEL	CIRCULATING WATER PUMPS	-350.00 TN	-	(41,328)	-		77.78 /MH		(41,328)
		MIXED STEEL	1/2 OF FUEL OIL TANKS	-190.00 TN	-	(22,435)	-		77.78 /MH		(22,435)
		MIXED STEEL	CHEMICAL FLUSH HOLDING TANK	-68.00 TN	-	(8,029)	-		77.78 /MH		(8,029)
		MIXED STEEL	CONTAMINATED CONDENSATE STORAGE TANK	-79.00 TN	-	(9,328)	-		77.78 /MH		(9,328)
		MIXED STEEL	MISCELLANEOUS TANKS	-160.00 TN	-	(18,893)	-		77.78 /MH		(18,893)
		MIXED STEEL	U1 TURBINE GENERATOR	-2,020.00 TN	-	(238,522)	-		77.78 /MH		(238,522)
		MIXED STEEL	CONVEYORS BENT AND TRUSSES	-1,750.00 TN	-	(206,640)	-		77.78 /MH		(206,640)

Estimate No.: 33962B
Project No.: 13465-000
Estimate Date: 02/10/2016
Prep/Rev/Appr: RCK/ADC/MNO

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Sargent & Lundy

Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Crew Rate	Labor Cost	Total Cost
	18.10.00	MIXED STEEL									
		MIXED STEEL	U1 PULVERIZED FUEL EQUIPMENT	-400.00 TN	-	(47,232)	-		77.78 /MH		(47,232)
		MIXED STEEL	1/2 OF (2) BARGE UNLOADERS	-400.00 TN	-	(47,232)	-		77.78 /MH		(47,232)
		MIXED STEEL	PIPING	-5,000.00 TN	-	(590,400)	-		77.78 /MH		(590,400)
		MIXED STEEL	U1 DSI EQUIPMENT INCLUDING HOPPERS	-54.00 TN	-	(6,376)	-		77.78 /MH		(6,376)
		MIXED STEEL	U1 SCR	-4,651.00 TN	-	(549,190)	-		77.78 /MH		(549,190)
		MIXED STEEL	1/2 OF RAIL TRACK	-447.00 TN	-	(52,782)	-		77.78 /MH		(52,782)
		MIXED STEEL				(8,700,430)					(8,700,430)
	18.20.00	STAINLESS STEEL									
		STAINLESS STEEL	U1 CLEAN CONDENSATE STORAGE TANK (STAINLESS STEEL)	-119.00 TN	-	(80,325)	-		77.78 /MH		(80,325)
		STAINLESS STEEL				(80,325)					(80,325)
	18.30.00	COPPER									
		COPPER	U1 CONDENSER TUBES (MAIN AND AUX)	-694.00 TN	-	(2,206,920)	-		77.78 /MH		(2,206,920)
		COPPER	CABLE U1 & 1/2 OF COMMON	-407.00 TN	-	(1,294,260)	-		77.78 /MH		(1,294,260)
		COPPER	TRANSFORMERS & MOTORS UNIT 1	-400.00 TN	-	(1,272,000)	-		77.78 /MH		(1,272,000)
		COPPER				(4,773,180)					(4,773,180)
		SCRAP VALUE				**(13,553,935)**					**(13,553,935)**
21.00.00		**CIVIL WORK**									
	21.47.00	LANDSCAPING									
		HYDRO OR AIR SEED & MULCH & FERTILIZER	1/2 OF COMMON (171 ACRES) + 33 ACRES U1	204.00 AC	-	-	311,406	2,895	78.86 /MH	228,304	539,710
		LANDSCAPING					311,406	2,895		228,304	539,710
		CIVIL WORK					**311,406**	**2,895**		**228,304**	**539,710**

EXHIBIT 2
Rockport Plant Unit 1
Asbestos Removal Conceptual Cost Estimate No. 33963B

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INEVN
Project No.	13465-000
Station Name	ROCKPORT
Unit	1 & PLANT COMMON
Estimate Date	02/10/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33963B
Estimate Class	CONCEPTUAL
Cost index	INEVN

Estimate No.: 33963B
Project No.: 13465-000
Estimate Date: 02/10/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Sargent & Lundy

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
COMMON	ASBESTOS REMOVAL, COMMON	299,488					299,488
UNIT 1	ASBESTOS REMOVAL, UNIT 1	25,500			132	13,378	38,878
	TOTAL DIRECT COST	**324,988**			**132**	**13,378**	**338,366**

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	13,378		132
Material			
Subcontract	324,988		
Scrap Value			
	338,366	**338,366**	
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			
		338,366	
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	34,000		
93-8 EPC Fee			
	34,000	**372,366**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor	3,000		
94-3 Contingency on Sub.	65,000		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	7,000		
	75,000	**447,366**	
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			
		447,366	
Total		***447,366***	

Estimate No..: 33963B
Project No.: 13465-000
Estimate Date: 02/10/2016
Prep/Rev/App: RCK/ADC/MNO

AEP ROCKPORT
FOSSIL PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Sargent & Lundy

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
COMMON			**ASBESTOS REMOVAL, COMMON**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS/PCB REMOVAL									
			TRANSITE PIPE, NONFRIABLE, COOLING TOWER	ASSUME 6" DIAMETER ON 10' CENTERS	11,900.00 LF		101.34 /MH			209,440	-	209,440
			ASBESTOS REMOVAL - ELECTRICAL -600 V SWITCHGEAR	ALLOWANCE	1.00 LS		122.82 /MH			12,200	-	12,200
			ASBESTOS REMOVAL - DRIFT ELIMINATORS COOLING TOWER	ASSUME 1"X8' BOARD 6" CENTERS	19,910.00 LF		122.82 /MH			77,848	-	77,848
			PCB REMOVAL	NO PCBs ONSITE - ASBESTOS ONLY	0.00 TN		122.82 /MH				-	
			ASBESTOS/PCB REMOVAL							299,488		299,488
			WHOLE PLANT DEMOLITION							299,488		299,488
			COMMON ASBESTOS REMOVAL, COMMON							**299,488**		**299,488**
UNIT 1			**ASBESTOS REMOVAL, UNIT 1**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS/PCB REMOVAL									
			FLOOR TILE, NONFRIABLE	ALLOWANCE	500.00 SF	44	101.34 /MH	4,459		-	-	4,459
			CEILING TILE, NONFRIABLE	ALLOWANCE	500.00 SF	88	101.34 /MH	8,919		-	-	8,919
			ASBESTOS REMOVAL - ELECTRICAL -600 V SWITCHGEAR	ALLOWANCE	1.00 LS		122.82 /MH			15,500	-	15,500
			ASBESTOS REMOVAL - MISC GASKETS	ALLOWANCE	1.00 LS		122.82 /MH			10,000	-	10,000
			ASBESTOS/PCB REMOVAL			132		13,378		25,500		38,878
			WHOLE PLANT DEMOLITION			132		13,378		25,500		38,878
			UNIT 1 ASBESTOS REMOVAL, UNIT 1			**132**		**13,378**		**25,500**		**38,878**

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

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 RC	A.D. Chapin AChapin D. F. Franczak D.F.Fraps	T. J. Meehan	All

TABLE OF CONTENTS

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

February 12, 2016

	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

Sargent & Lundy

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***	

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

Sargent & Lundy

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

Estimate No..: 33705B
Project No.: 13465-000
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AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Sargent & Lundy

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

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

Sargent & Lundy

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

Sargent & Lundy

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

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***	

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

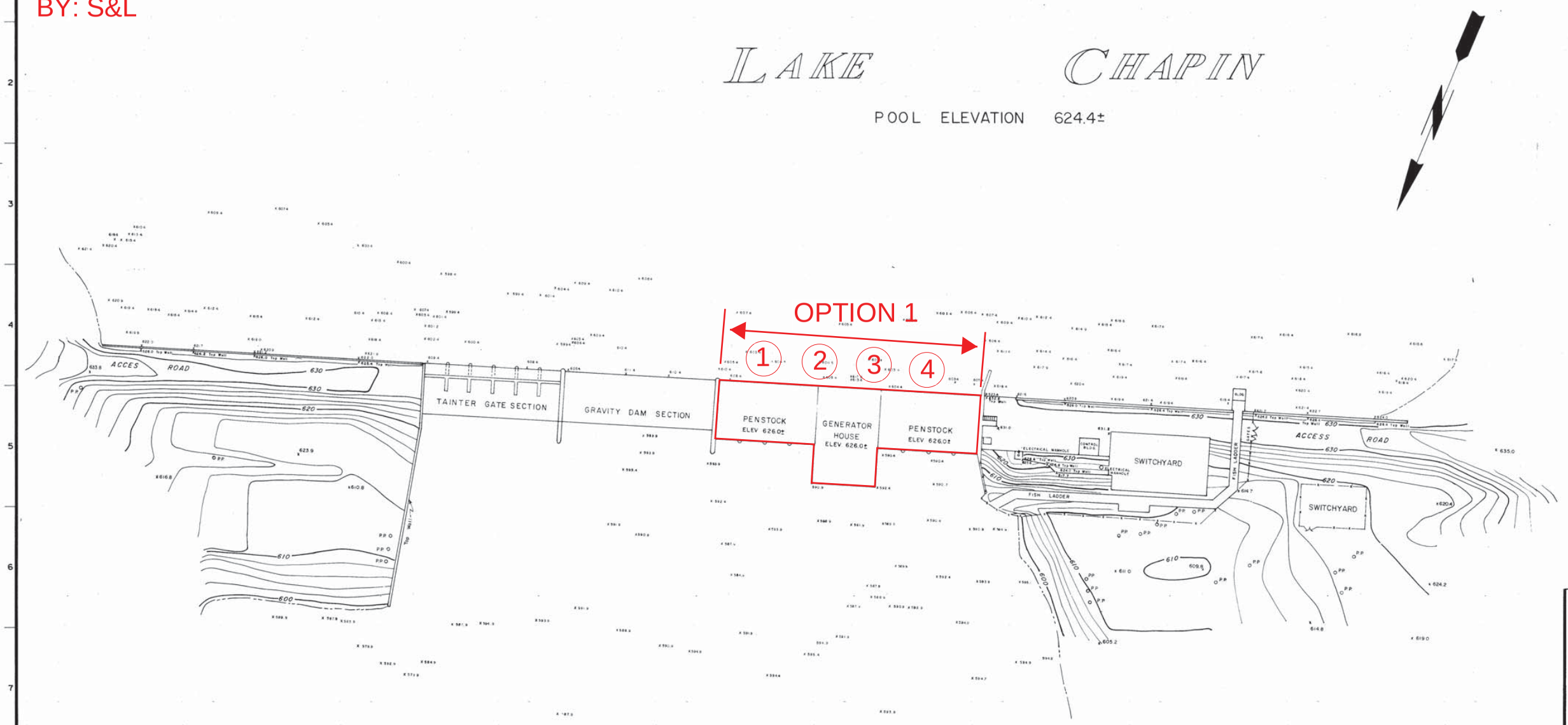
Sargent & Lundy

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



PLAN
SCALE 1" = 40'

OPTION 1

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

DATE	NO.	DESCRIPTION	APPD.
1/29/16	0	ISSUED FOR CONSTRUCTION	MP

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"=60'		ENGINEERING DIVISION	
DR: JLB			
CH: MPP		APPROVED BY	
SG. LDR:		DESIGN DIVISION	
DATE: 1/29/16			

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):	DRAWN BY JDB DATE 6/23/87
DESIGNER	CHECKED BY KLH DATE 6/25/87
A.E.P. CO.	SHEET 1 OF 1
	SCALE 1" = 40'

083 40/40 870609

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 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

LAKE CHAPIN

POOL ELEVATION 624.4±

4 7 CAUSEWAY 6

1 2 3 8

ACCES ROAD

TAINTER GATE SECTION

GRAVITY DAM SECTION

PENSTOCK ELEV 626.0±

GENERATOR HOUSE ELEV. 626.0±

PENSTOCK ELEV 626.0±

SWITCHYARD

ACCESS ROAD

SWITCHYARD

FISH LADDER

5 DEMO

RETAINING WALL TO REMAIN IN PLACE

PLAN
SCALE 1" = 40'

OPTION 2

ST. JOSEPH RIVER

WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
1/29/16	0	ISSUED FOR CONSTRUCTION	MP

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.S.T.
CH. MPP
SQ. LDR.
DATE 1/22/16

APPROVED BY: ENGINEERING DIVISION MP Sadler; 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 JDB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'

083 330/40 870609

AMERICAN ELECTRIC POWER SERVICE CORP.

AEP-G 678B

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

ACCESS ROAD

ACCES ROAD

FISH LADDER

OPTION 3

PLAN
SCALE 1" = 40'

ST. JOSEPH RIVER

WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
1/29/16	3	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 KLM DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'

083 330/40 870609

ENGINEERING DIVISION
APPROVED BY
DESIGN DIVISION

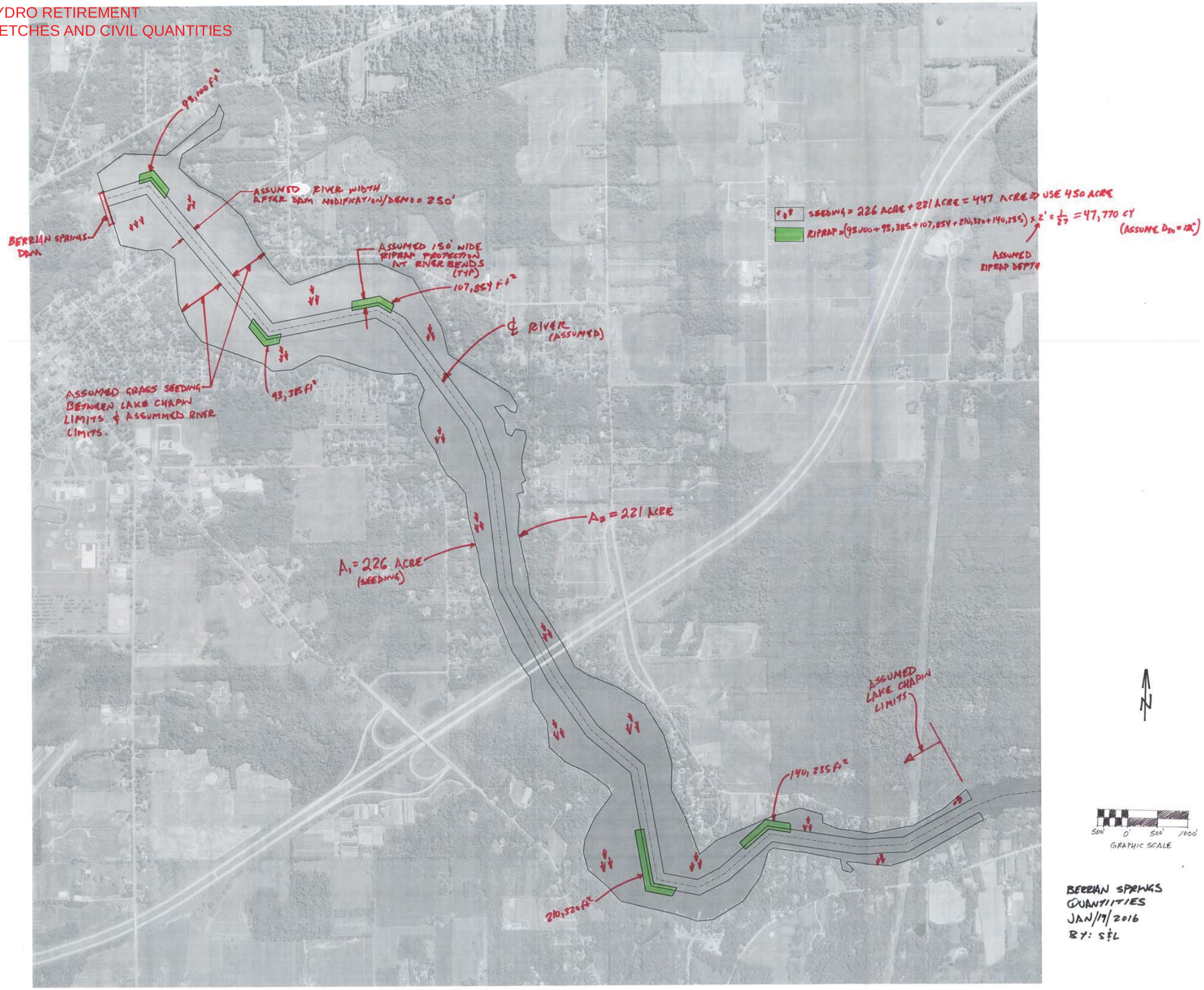
AMERICAN ELECTRIC POWER SERVICE CORP.

6788

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"

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



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

LAKE CHAPIN

POOL ELEVATION 624.4±

260'±

RIPRAP PROTECTION

TAINTER GATE SECTION | GRAVITY DAM SECTION | PENSTOCK ELEV 626.0± | GENERATOR HOUSE ELEV 626.0± | PENSTOCK ELEV 626.0±

ACCES ROAD

SWITCHYARD

ACCESS ROAD

SWITCHYARD

FISH LADDER

(ASSUME D_{50}=12")

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

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

V_{CUT} TO BE REPLACED BY RIPRAP

PLAN
SCALE 1" = 40'

FLOW

5'

2'

SPILLWAY FLOOR SLAB TO REMAIN IN PLACE

RIVER BED

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

SECTION A
N.T.S.

ST. JOSEPH RIVER

WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
8/29/78		ISSUED FOR CONSTRUCTION	MP

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

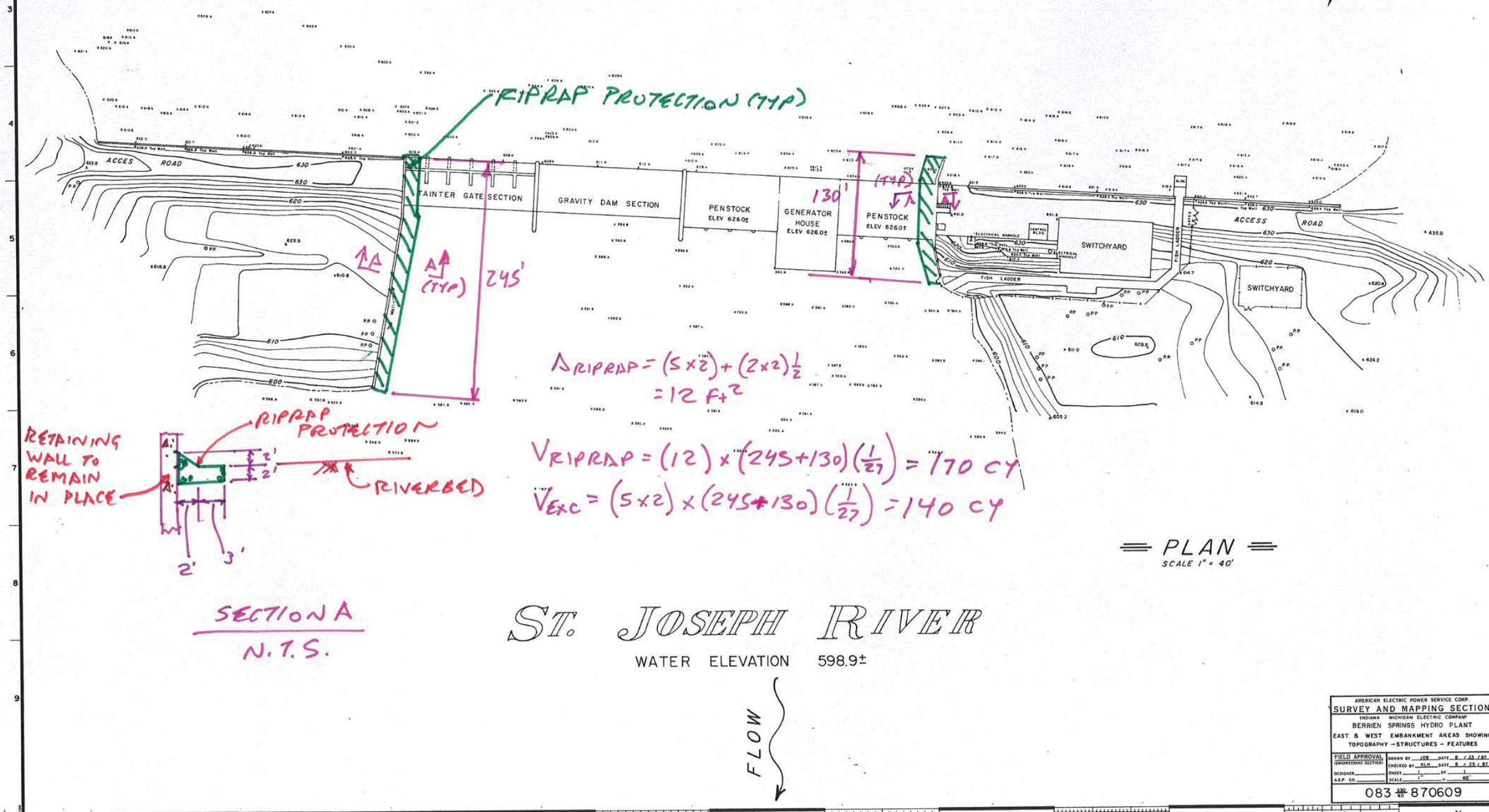
EXITING TOPOGRAPHY

DRG. 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 6/23/87
SHEET 1 OF 1
SCALE 1" = 40'
DATE 2/22/88
APPROVED BY
ENGINEERING DIVISION
DESIGN DIVISION
083 1/2 870609
AMERICAN ELECTRIC POWER SERVICE CORP.

AEP-G 6788

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



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

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. MTB
SUB. LDR.
DATE 8/22/80
ENGINEERING DESIGN
CONSTRUCTION DESIGN
ENGINEERING SECTION
CONSTRUCTION DESIGN

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 6/23/82
CHECKED BY KLH DATE 6/23/82
CHKD'
SCALE 1"=40'

083 10/10 870609

AMERICAN ELECTRIC POWER SERVICE CORP.

678B

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

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

February 12, 2016

	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

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

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

Sargent & Lundy

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***	

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

Sargent & Lundy

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

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

Sargent & Lundy

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)

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

Sargent & Lundy

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

Sargent & Lundy

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

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

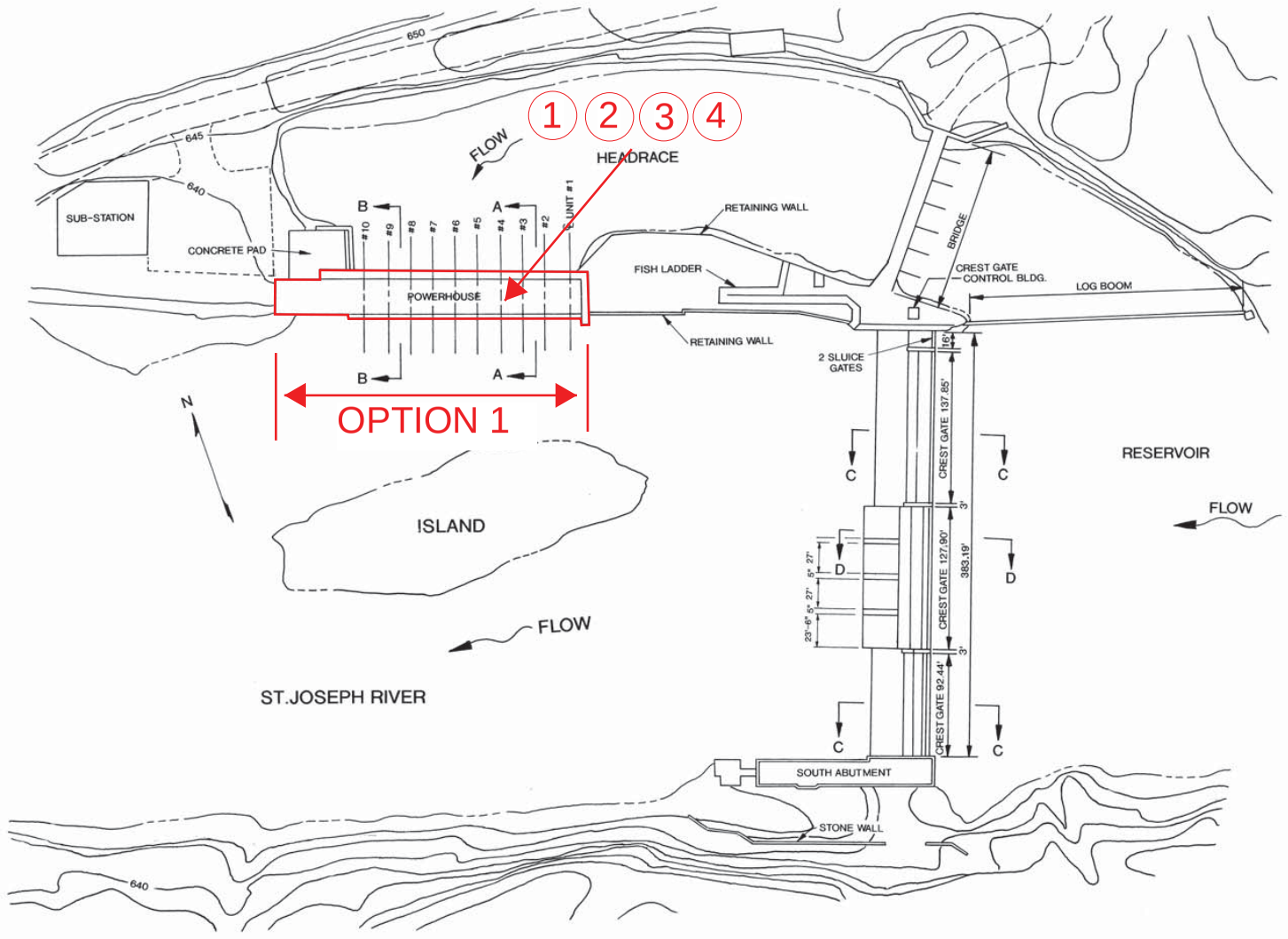
Sargent & Lundy

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

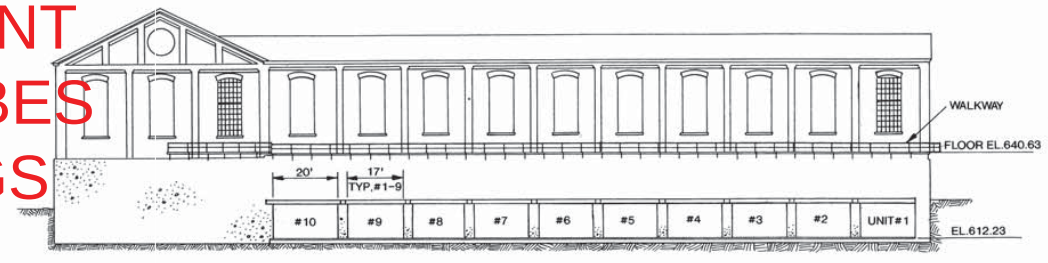
EXHIBIT 4
Buchanan Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

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

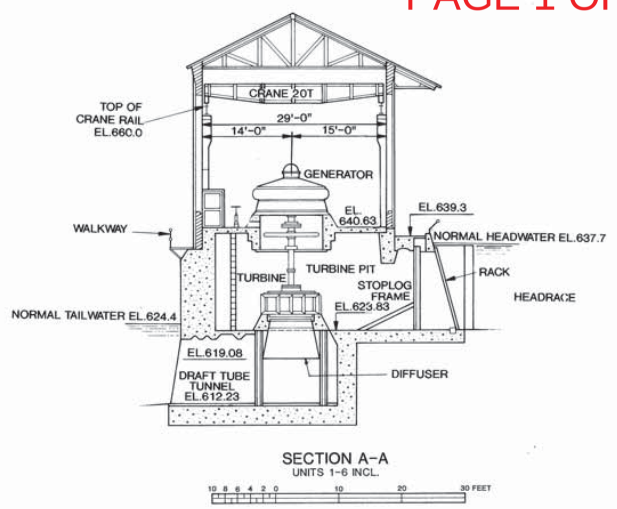
JANUARY 25, 2016
PAGE 1 OF 7



PLAN
0 50 100 150 200 FEET



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET



SECTION A–A
UNITS 1–6 INCL.
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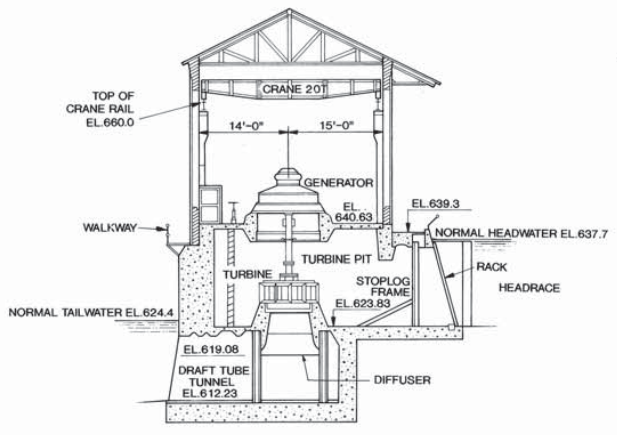


SECTION B–B
UNITS 7–10 INCL.
10 8 6 4 2 0 10 20 30 FEET

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

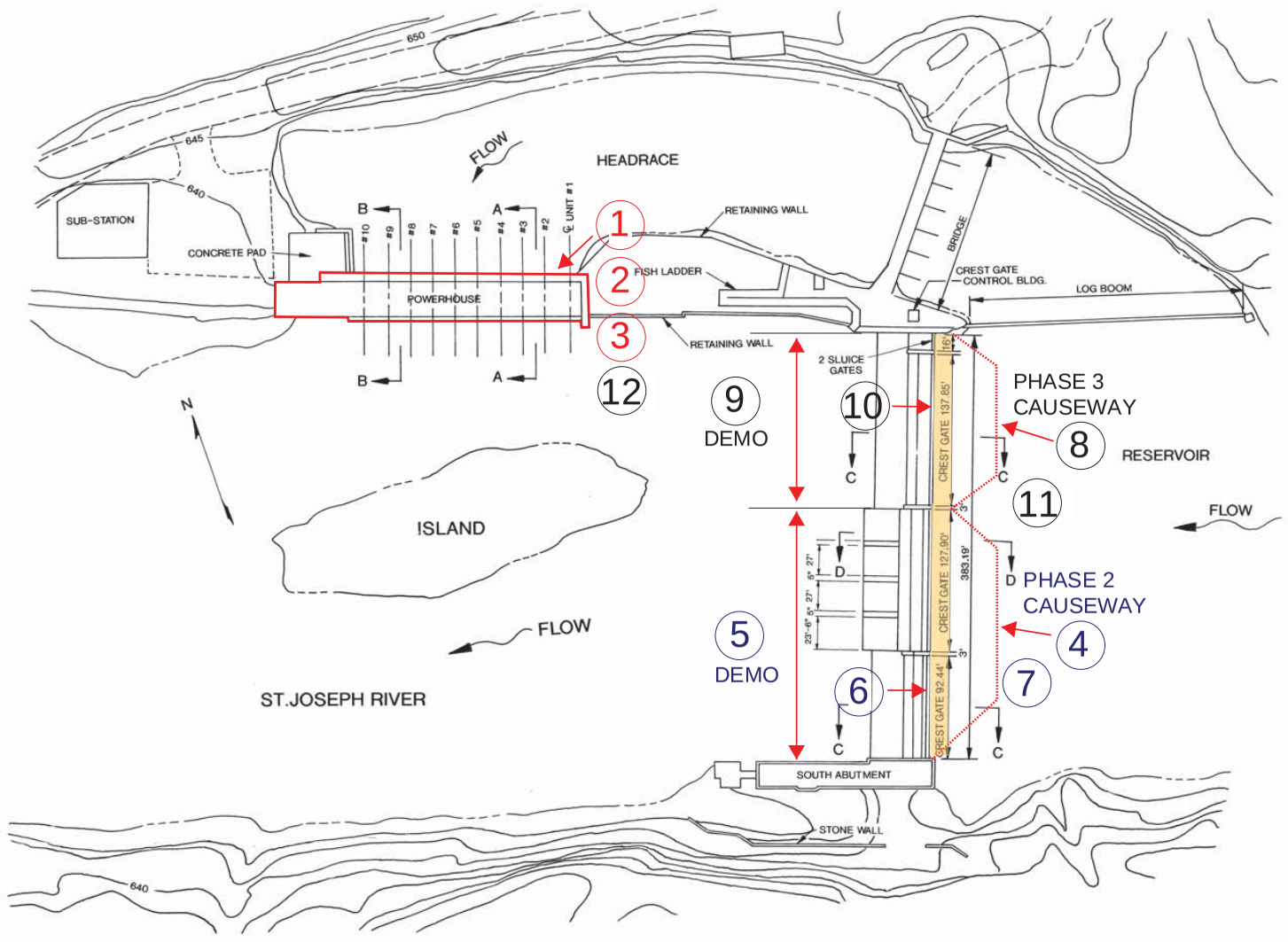
FERC No. 2551–004–1

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

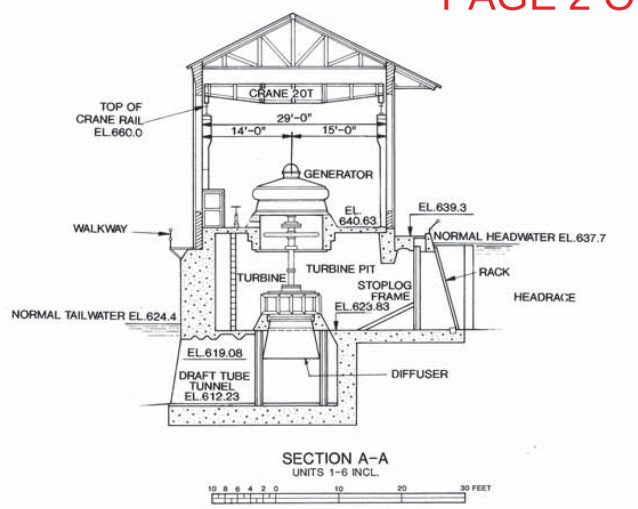
PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

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

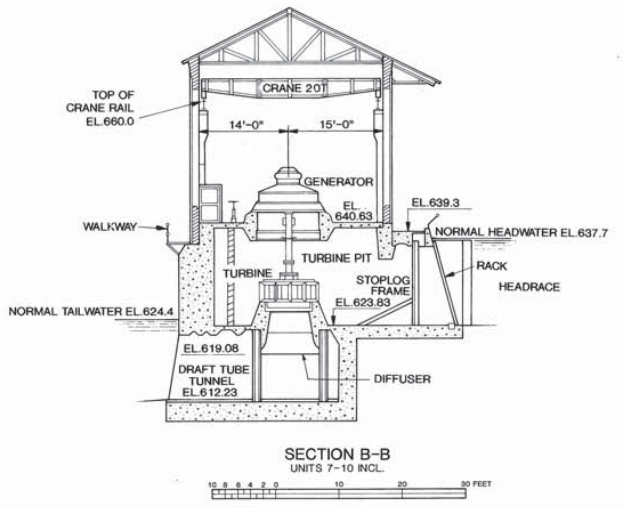
PHASE 3
⑧CONSTRUCT CAUSEWAY
⑨DEMO SPILLWAY
⑩PLACE RIPRAP PROTECTION
⑪REMOVE CAUSEWAY
⑫GROUT DRAFT TUBE



PLAN
0 50 100 150 200 FEET

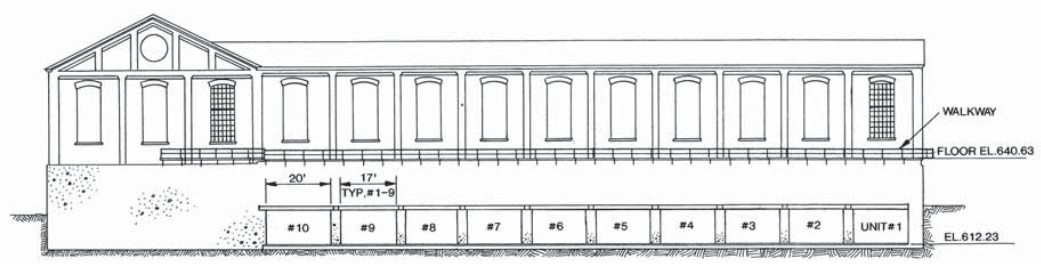


SECTION A–A
UNITS 1–6 INCL.
10 8 6 4 2 0 10 20 30 FEET



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

OPTION 2



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

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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

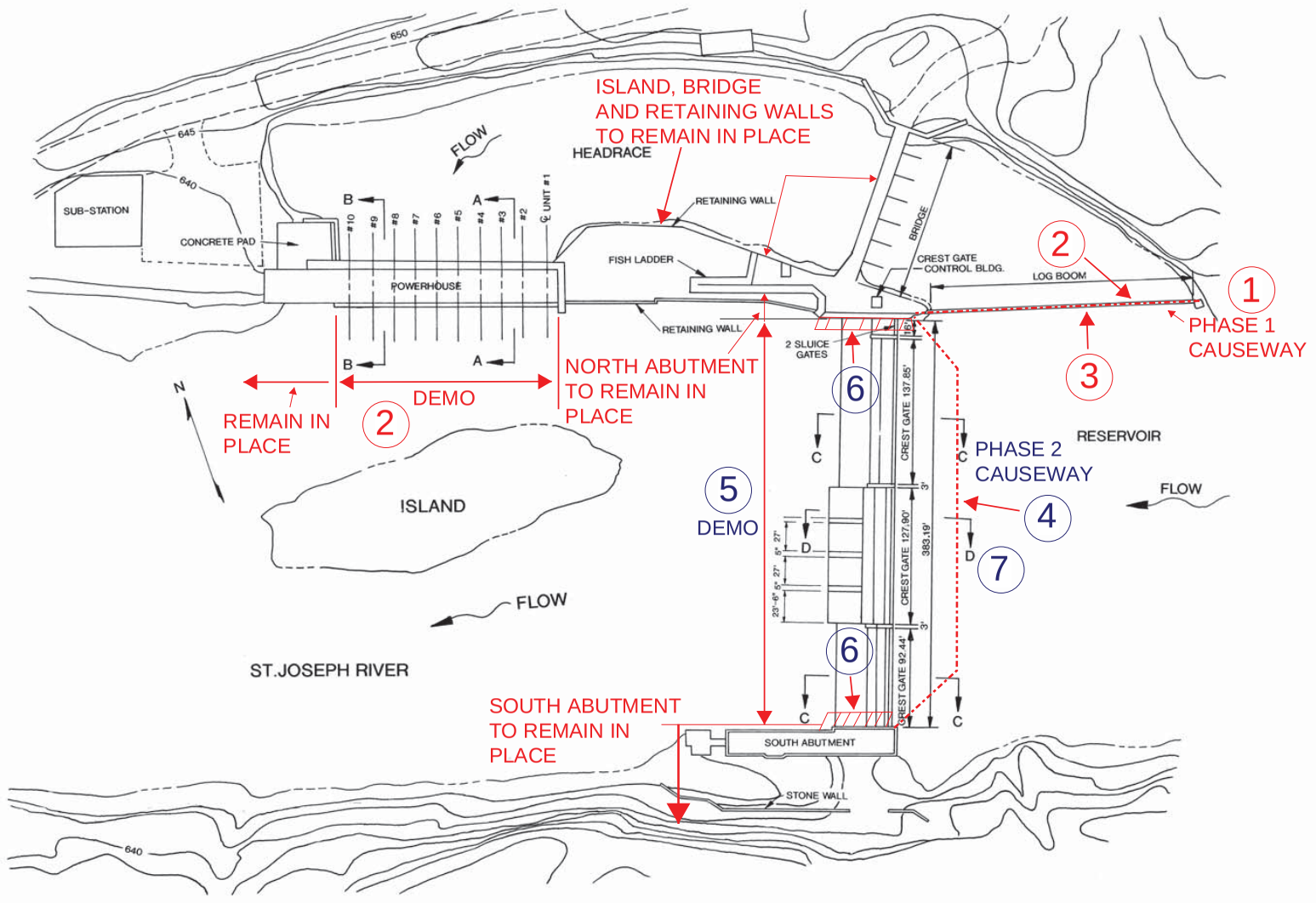
FERC No. 2551–004–1

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

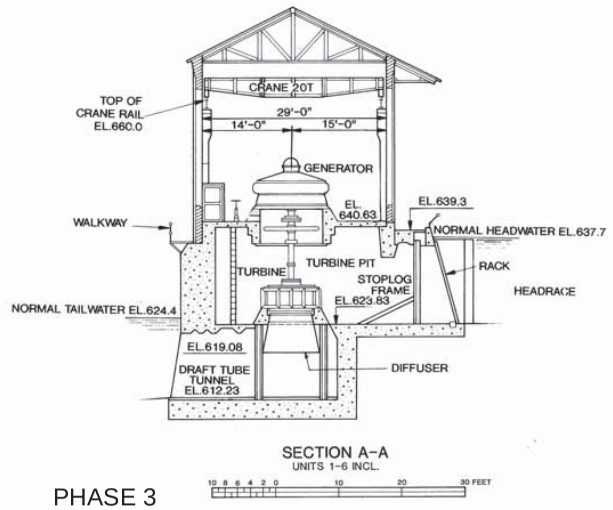
JANUARY 25, 2016

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

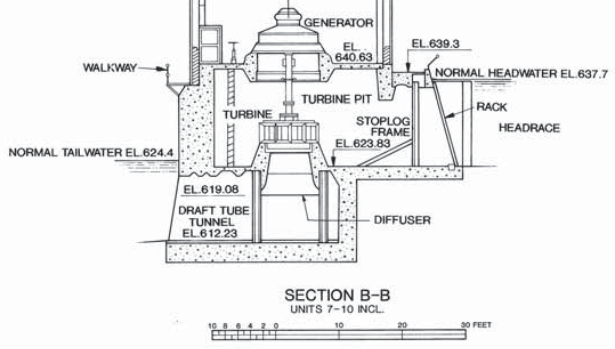


PLAN
0 50 100 150 200 FEET



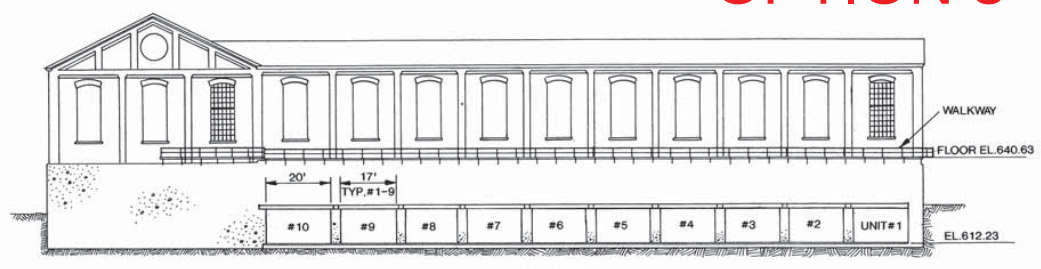
SECTION A–A
UNITS 1–6 INCL.

PHASE 3 CAUSEWAY



SECTION B–B
UNITS 7–10 INCL.

OPTION 3



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

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BY _____
DATE 10/31/91

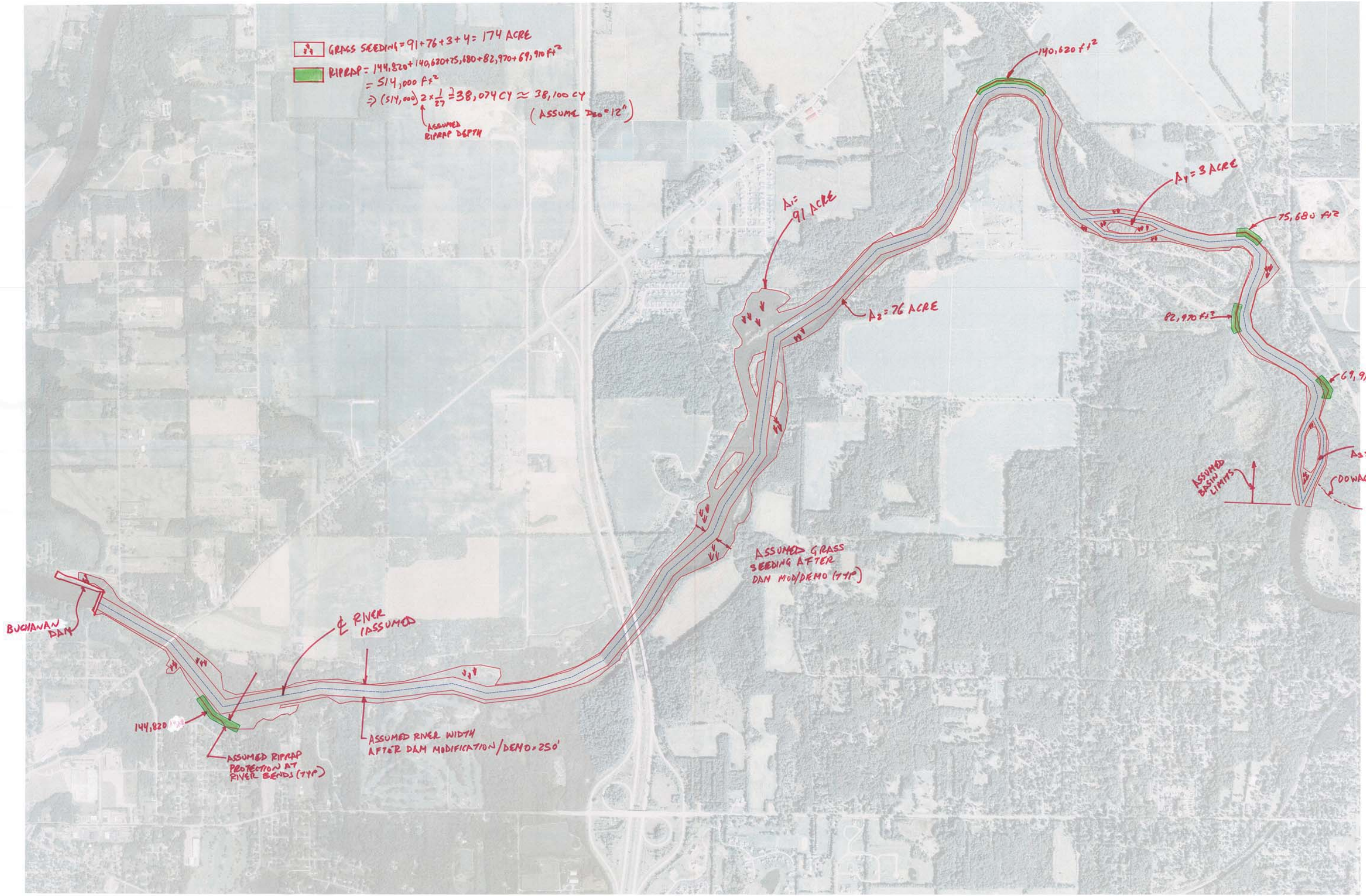
EXHIBIT F SHEET 1 OF 2

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

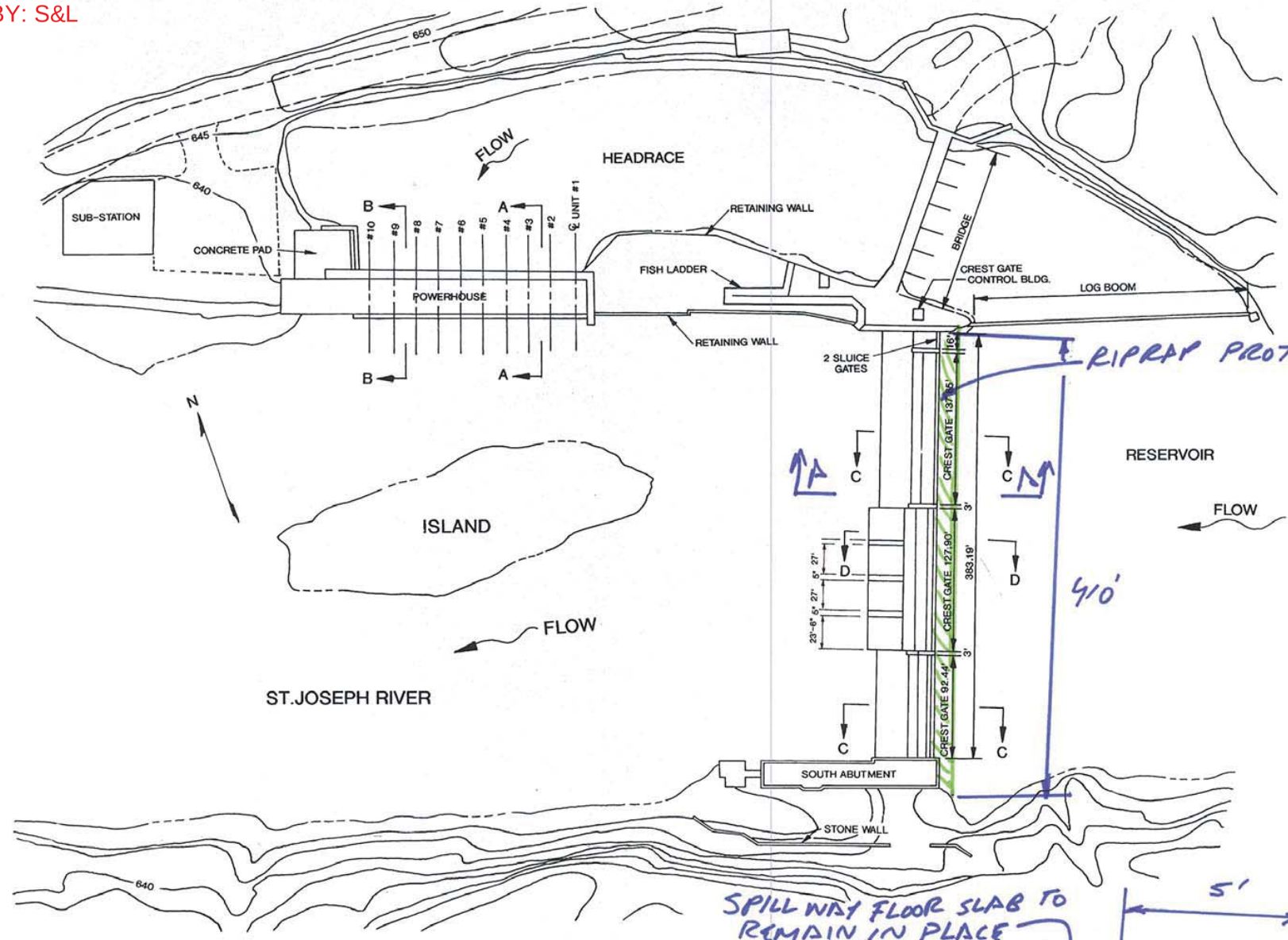
FERC No. 2551–004–1

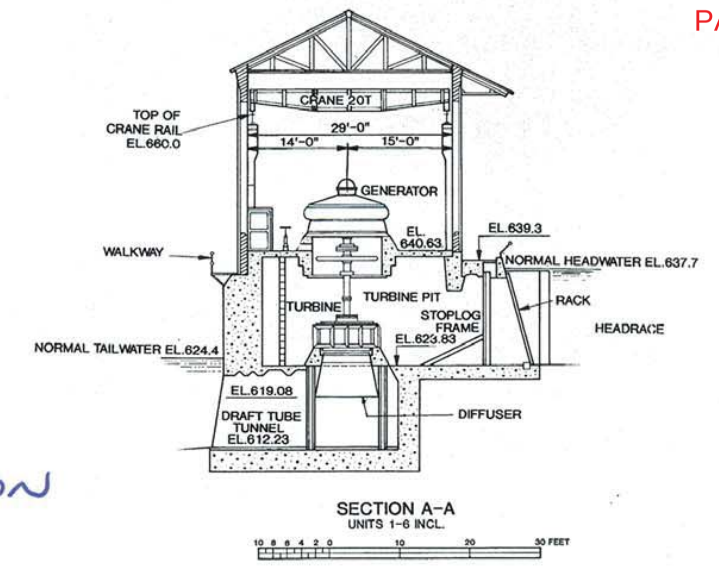
BUCHANAN			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	174	ACRE	
RIPRAP PROTECTION	38,100	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	152	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	152	CY	2 ft riprap protection @ D(50)=12"

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"

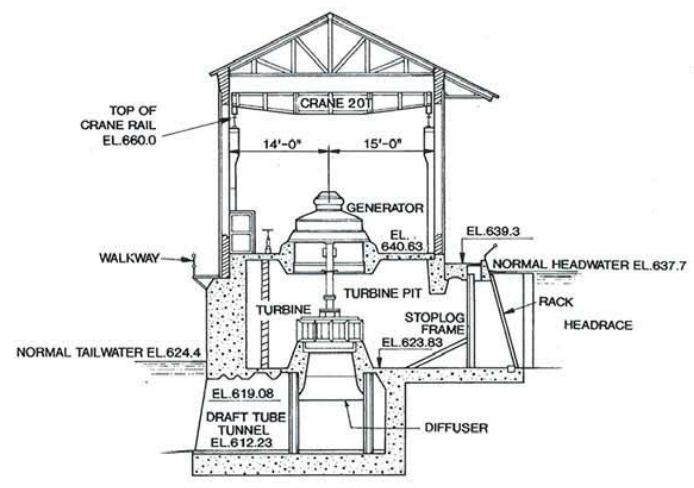


BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L





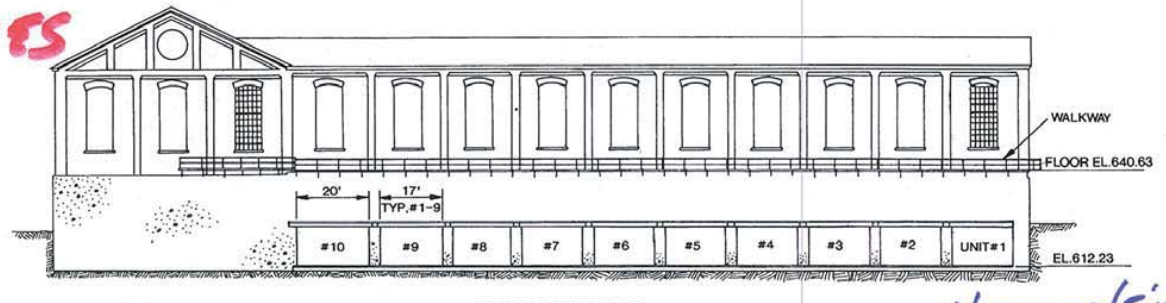
SECTION A–A
UNITS 1–6 INCL.



SECTION B–B
UNITS 7–10 INCL.

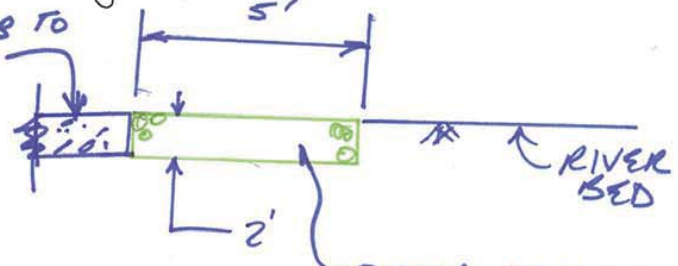
I&M CONCEPTUAL DEMO ESTIMATE
BUCHANAN RETREMENT OPTION 2
CIVIL QUANTITIES

PLAN
0 50 100 150 200 FEET



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

SPILL WAY FLOOR SLAB TO REMAIN IN PLACE



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

SECTION A
N.T.S.

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

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

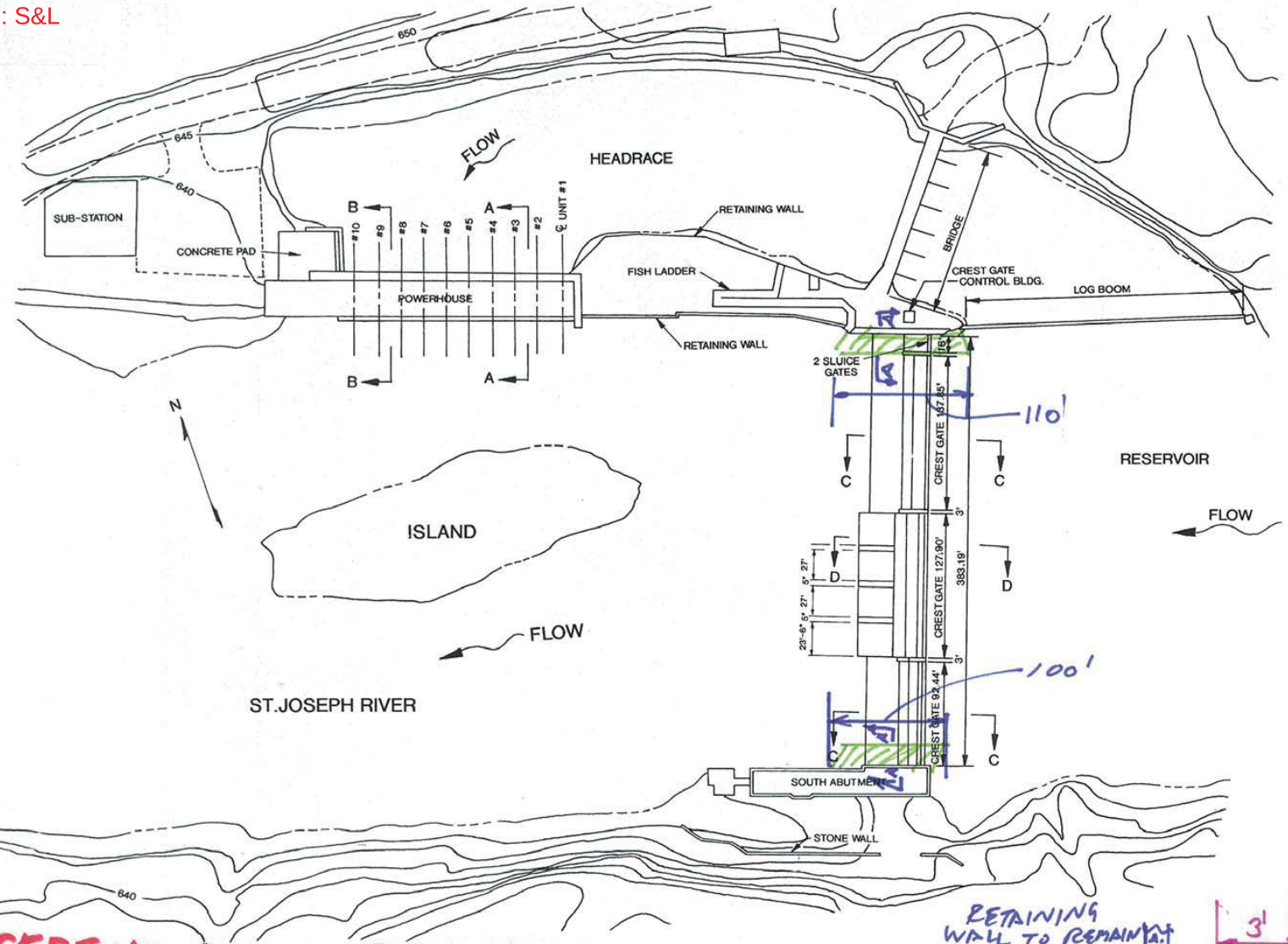
EXHIBIT F — SHEET 1 OF 2

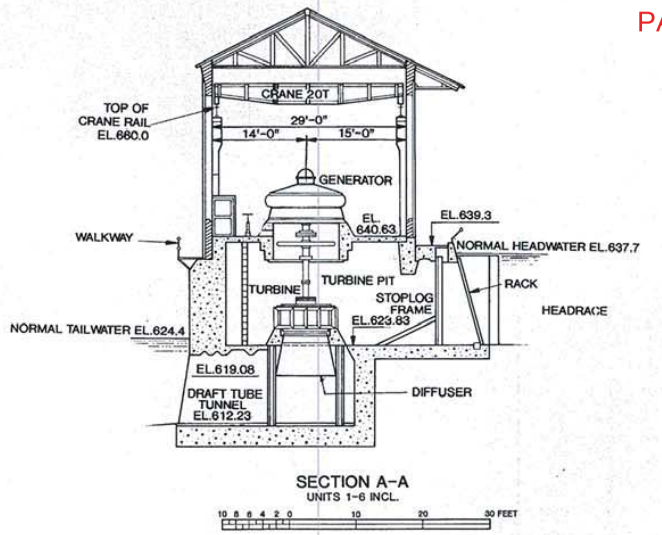
INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

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

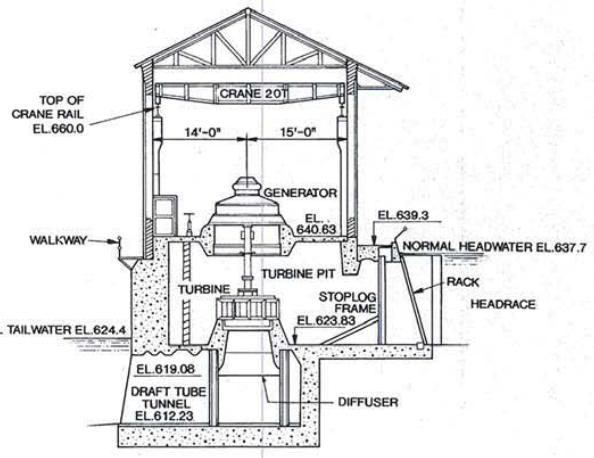
FERC No. 2551–004–1

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



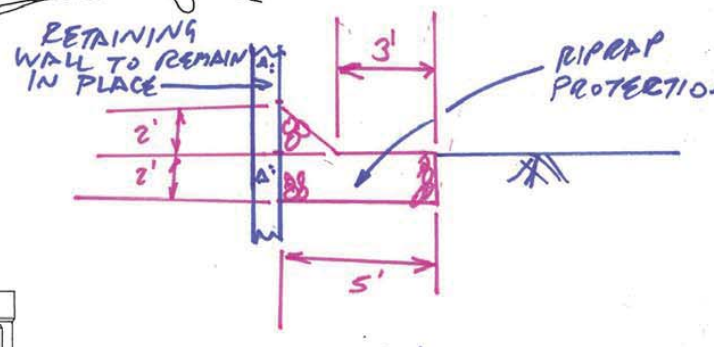


SECTION A-A
UNITS 1-6 INCL.
10 8 6 4 2 0 10 20 30 FEET



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

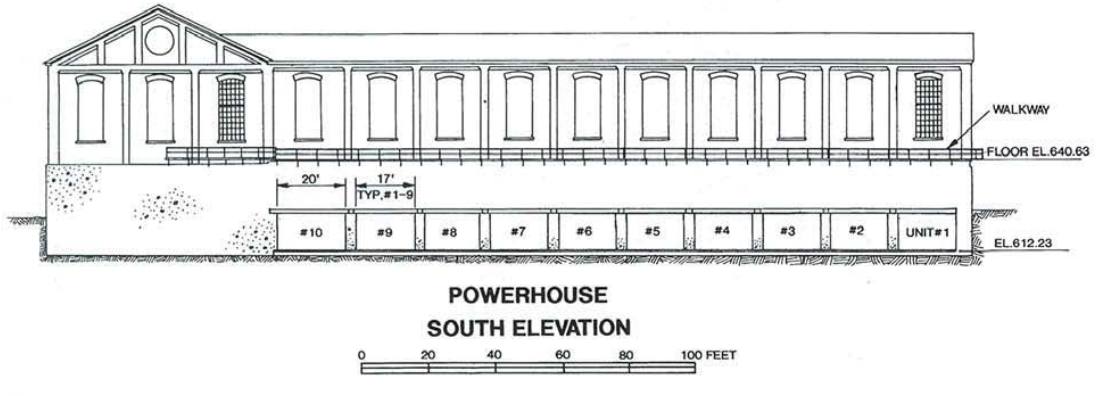
I&M CONCEPTUAL DEMO ESTIMATE
BUCHANAN RETIREMENT OPTION 3
CIVIL QUANTITIES



$V_{RIPRAP} = (12ft^2)(110+100) \times \frac{1}{27} = 95\ CY$

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

SECTION A
N.T.S



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

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

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 AChapin D. F. Franczak D. F. Franczak	T. J. Meehan	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.

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

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

February 12, 2016

	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

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

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

Sargent & Lundy

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***	

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

Sargent & Lundy

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									

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

Sargent & Lundy

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)

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

Sargent & Lundy

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**

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

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

Sargent & Lundy

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

AEP CONSTANTINE
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 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

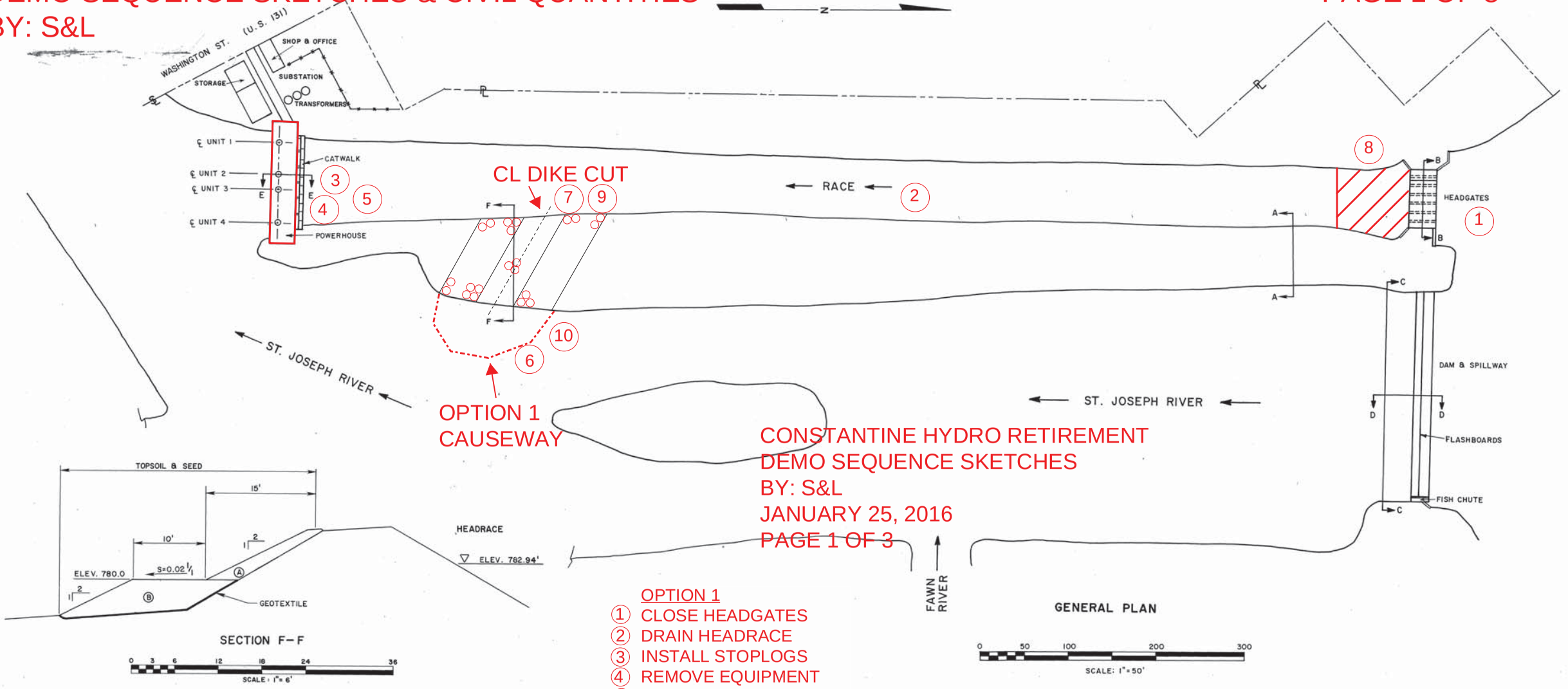
AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

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



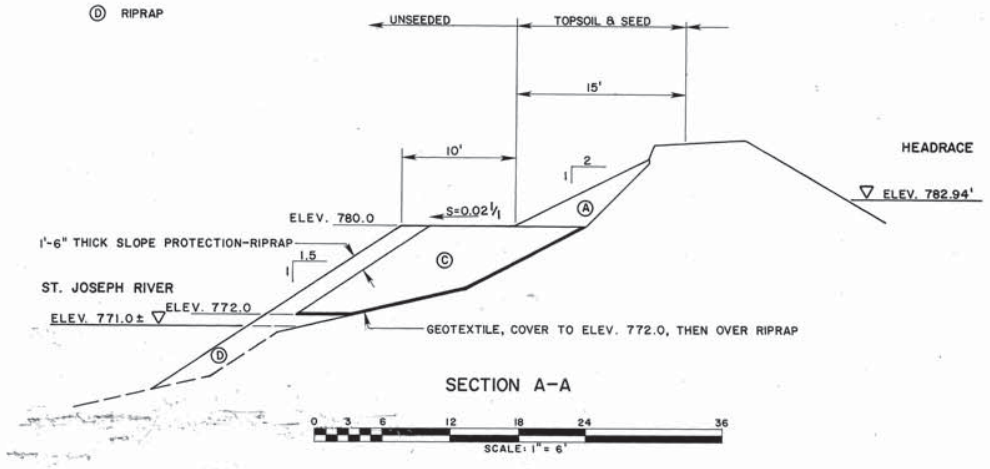
GENERAL PLAN

0 50 100 200 300
SCALE: 1"=50'

SECTION F-F

0 3 6 12 18 24 36
SCALE: 1"= 6'

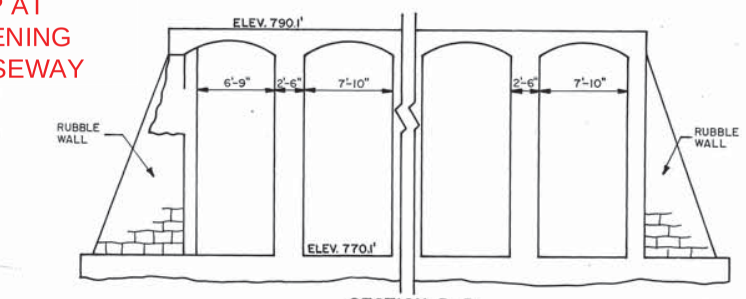
Ⓐ GENERAL FILL
Ⓒ ROCK FILL
Ⓓ RIPRAP



SECTION A-A

0 3 6 12 18 24 36
SCALE: 1"= 6'

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



SECTION B-B

0 3 6 12 18 24 36
SCALE: 1"= 6'

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept., 19 38

MICHIGAN POWER COMPANY
BY A.W. Williams Jr.
VICE PRESIDENT

EXHIBIT F
SHEET 1 OF 3

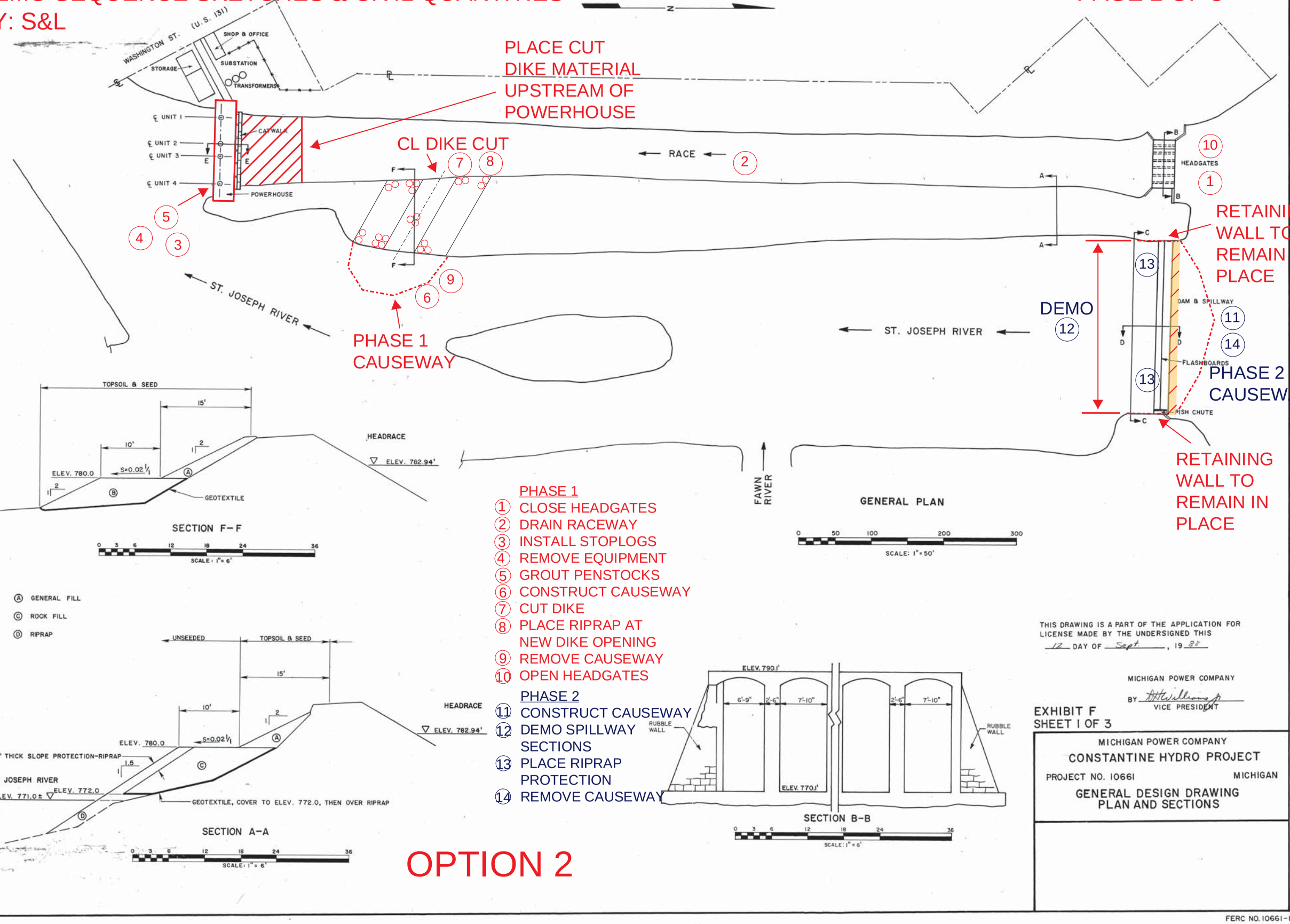
MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

FERC NO. 10661-1

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

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

JANUARY 25, 2016
PAGE 2 OF 8



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

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 82

MICHIGAN POWER COMPANY
BY VICE PRESIDENT

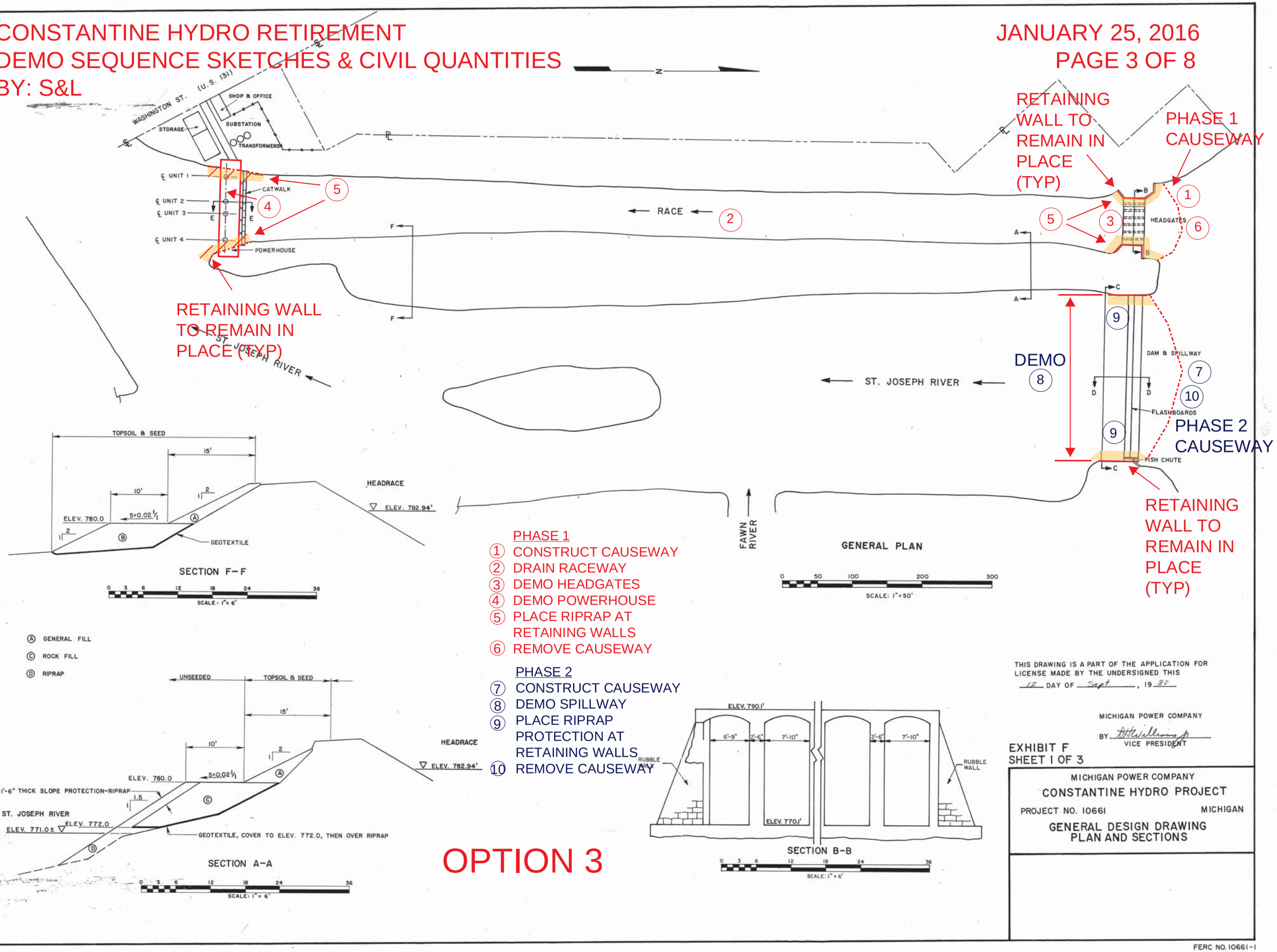
EXHIBIT F
SHEET 1 OF 3

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
PAGE 3 OF 8



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

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 82

MICHIGAN POWER COMPANY
BY A.W. 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

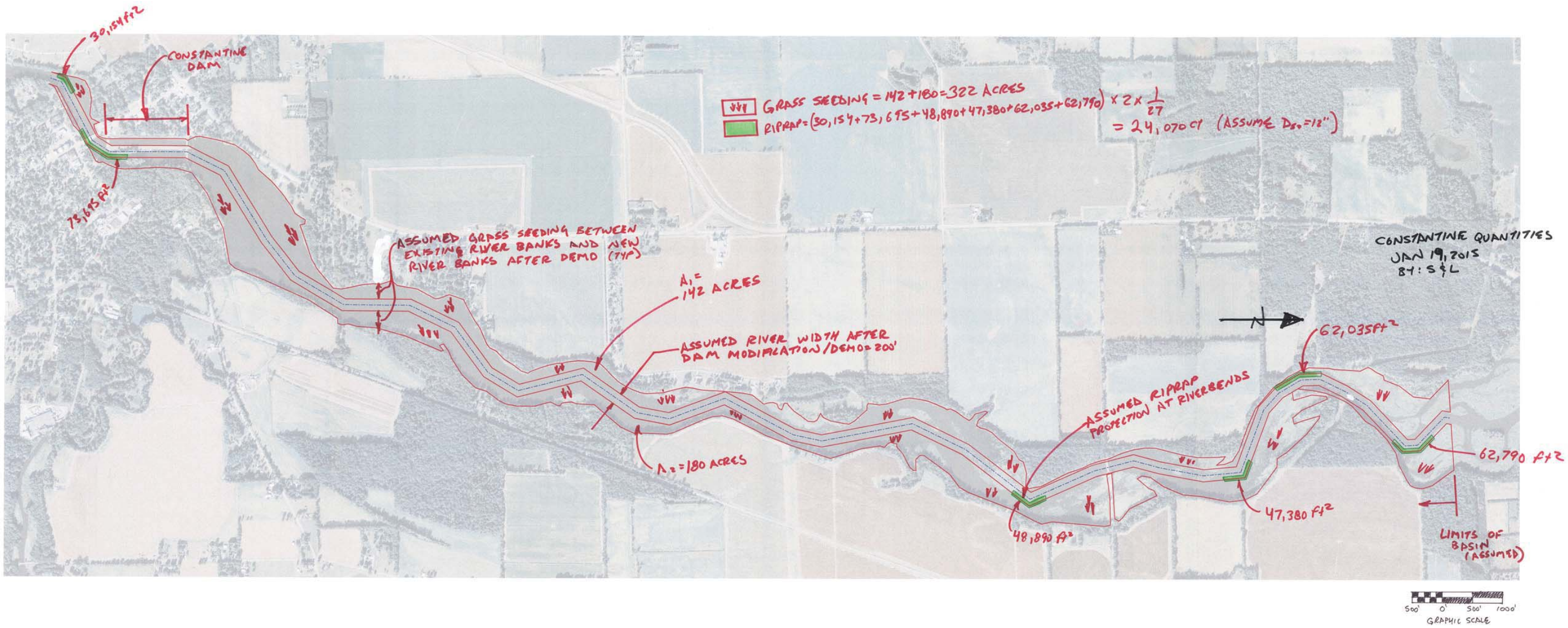
CONSTANTINE			
OPTION 1			
ITEM	QUANTITY	UNIT	REMARKS
DIKE EXCAVATION	5,075	CY	DIKE EXCAVATION TO DRAIN HEADRACE. PLACE MATERIAL BEHIND HEADGATE
RIPRAP PROTECTION AT DIKE MODIFICATION	1,765	CY	2 ft riprap protection @ D(50)=12"

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
75,695 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
ASSUMED RIPRAP PROTECTION AT RIVERBENDS
48,890 ft²
47,380 ft²
62,035ft²
62,790 ft²
LIMITS OF BASIN (ASSUMED)
GRASS SEEDING = 142 + 180 = 322 ACRES
RIPRAP = (30,154 + 73,695 + 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
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

QUANTITY
* APPLIES TO OPTION 1 & 2

$V_{CUT} = V_{A \to B} = (0+1200)\frac{1}{2} \times 39 \times \frac{1}{27} = 870 CY$
$V_{B \to C} = (1200+120)\frac{1}{2} \times 75 \times \frac{1}{27} = 3335 CY$
$V_{C \to D} = * V_{AB} = 870 CY$
$\Sigma V = 870 + 3335 + 870 = 5,075 CY$ (CUT) (*)

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

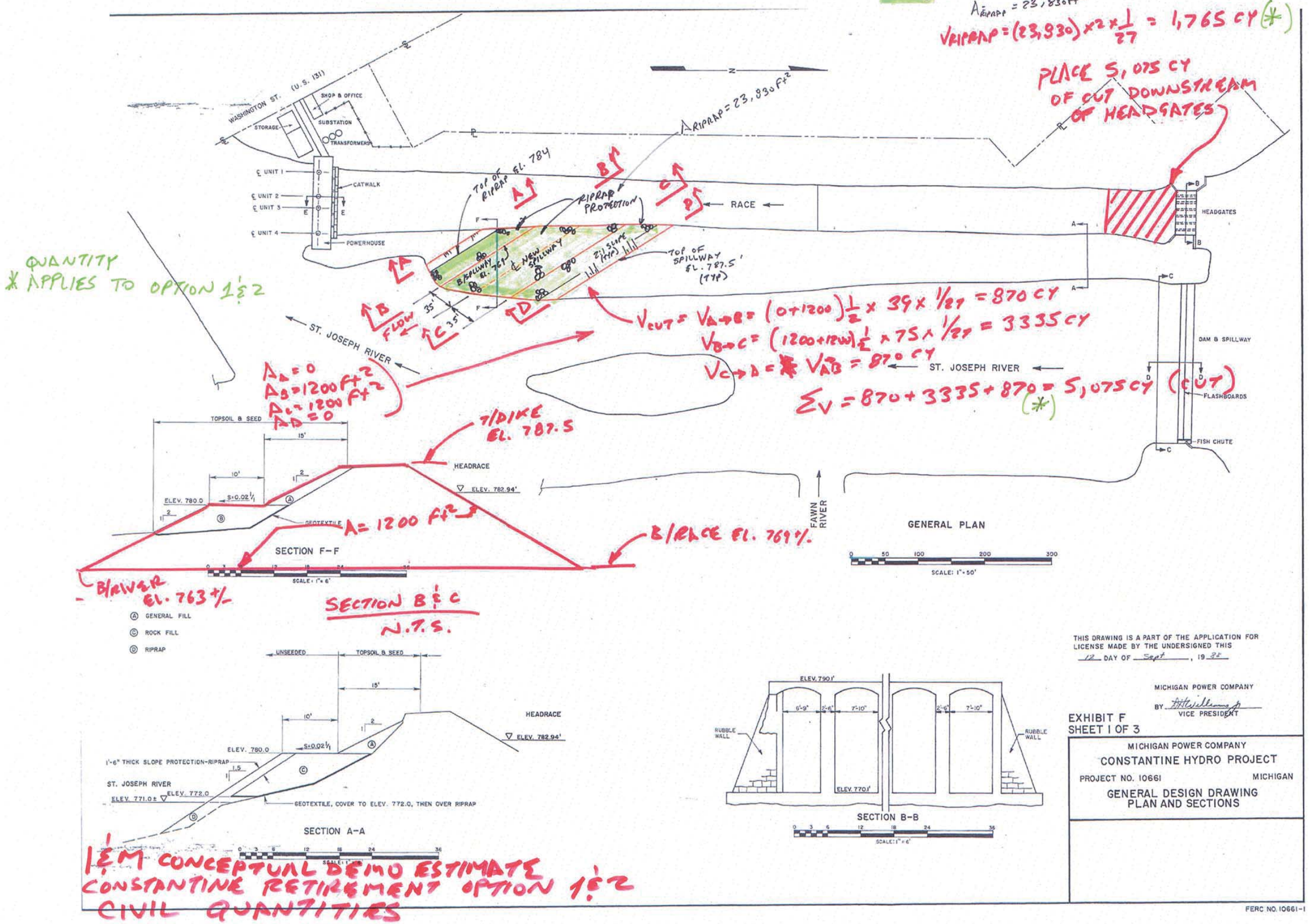
T/DIKE EL. 787.5

A = 1200 ft^2

B/RACE EL. 769 +/-

B/RIVER EL. 763 +/-

SECTION B & C
N.T.S.



THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 82

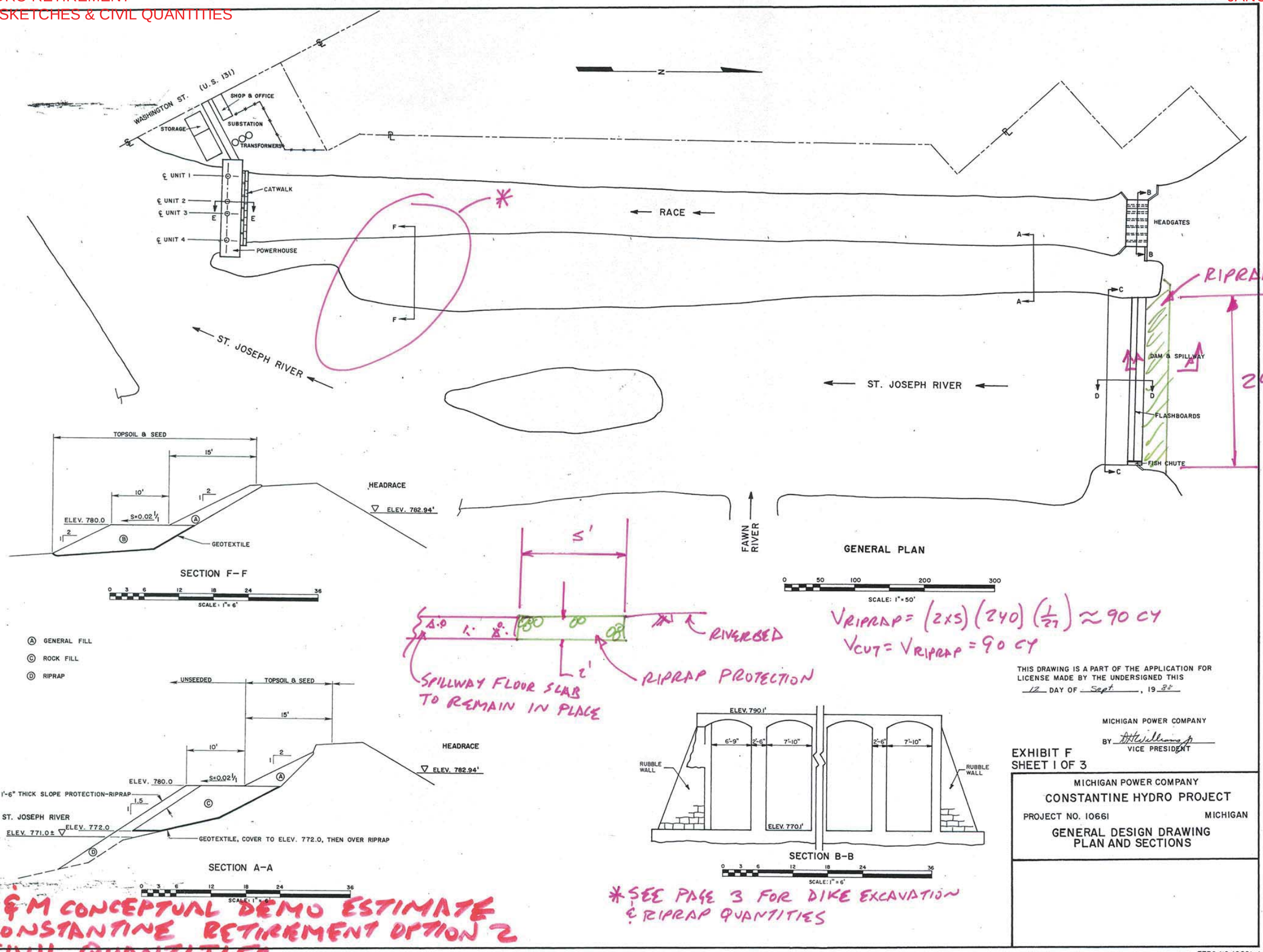
MICHIGAN POWER COMPANY
BY _____
VICE PRESIDENT

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

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



THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 82

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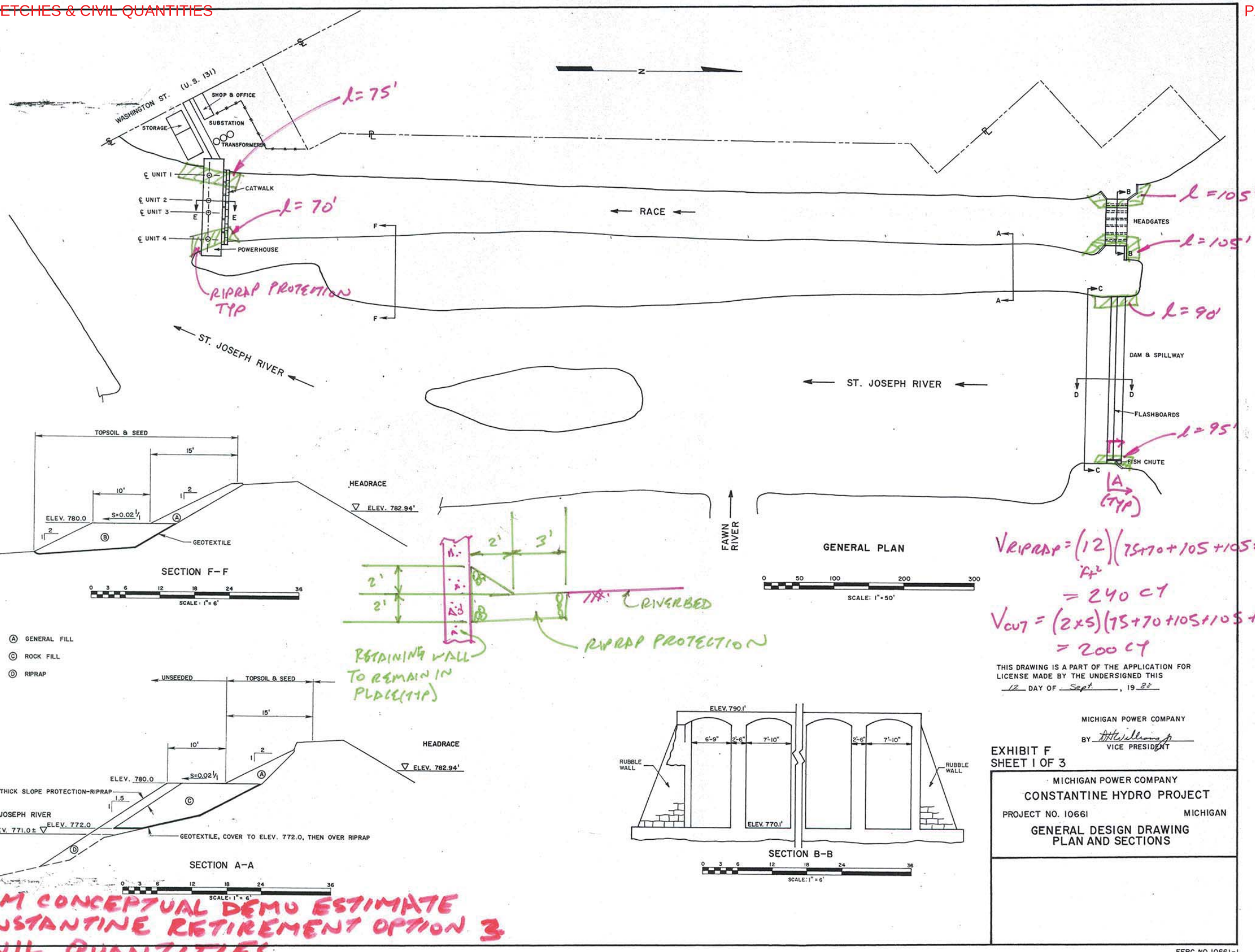
EXHIBIT F
SHEET 1 OF 3

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

FERC NO. 10661-1

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



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

$V_{RIPRAP} = \left(\frac{12}{ft^2}\right)(75+70+105+105+90+95)\frac{1}{27}$
$= 240\ CY$
$V_{CUT} = (2\times5)(75+70+105+105+90+95)\frac{1}{2\cdot2}$
$= 200\ CY$

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

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 R Kinsinger RC	A.D. Chapin AChapin D. F. Franczak D.F. Franczak	T. J. Meehan	All

TABLE OF CONTENTS

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

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

February 12, 2016

	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

Sargent & Lundy

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 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***	

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

Sargent & Lundy

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)

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

Sargent & Lundy

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

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

Sargent & Lundy

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

Sargent & Lundy

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

Sargent & Lundy

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

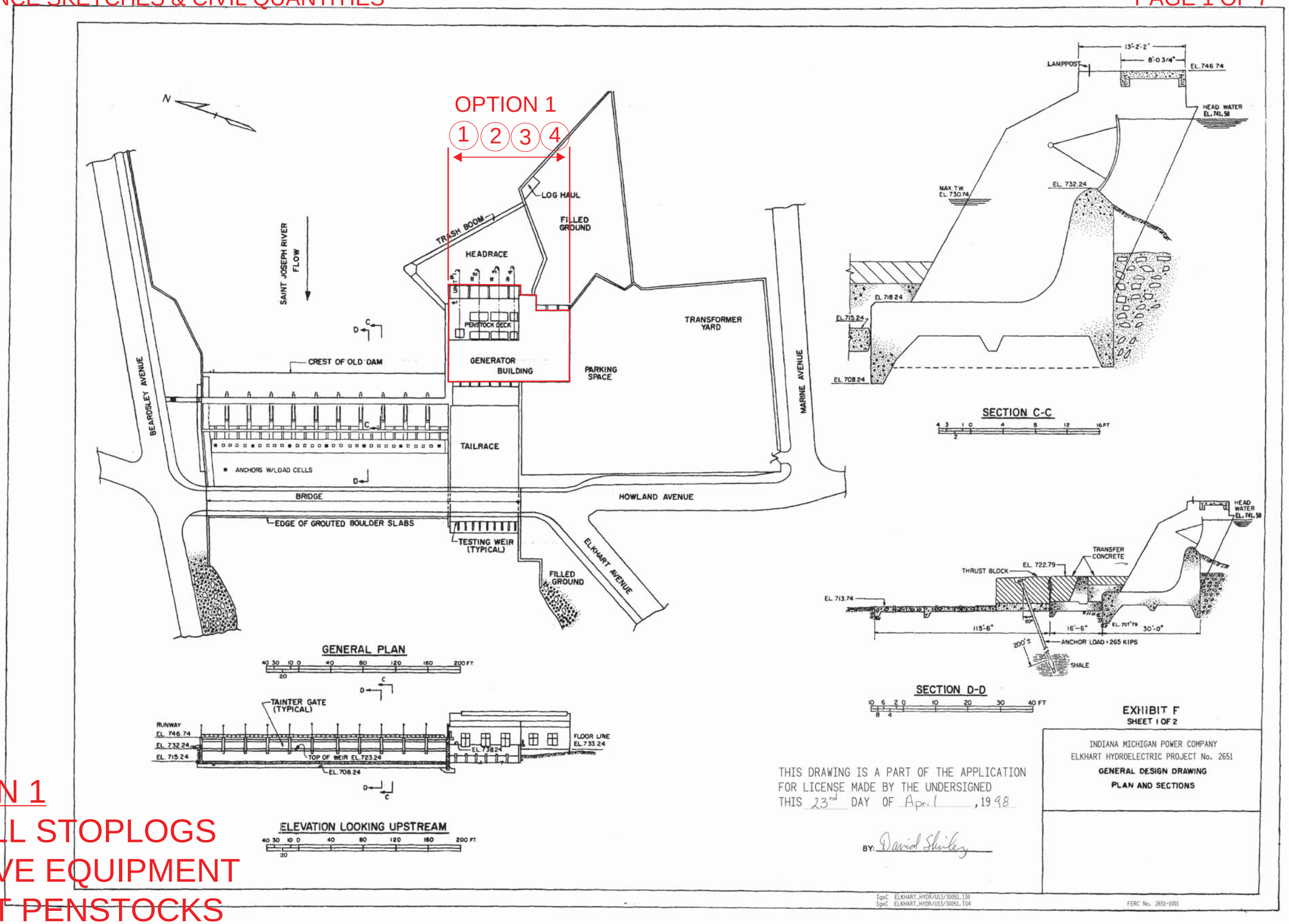
AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Sargent & Lundy

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

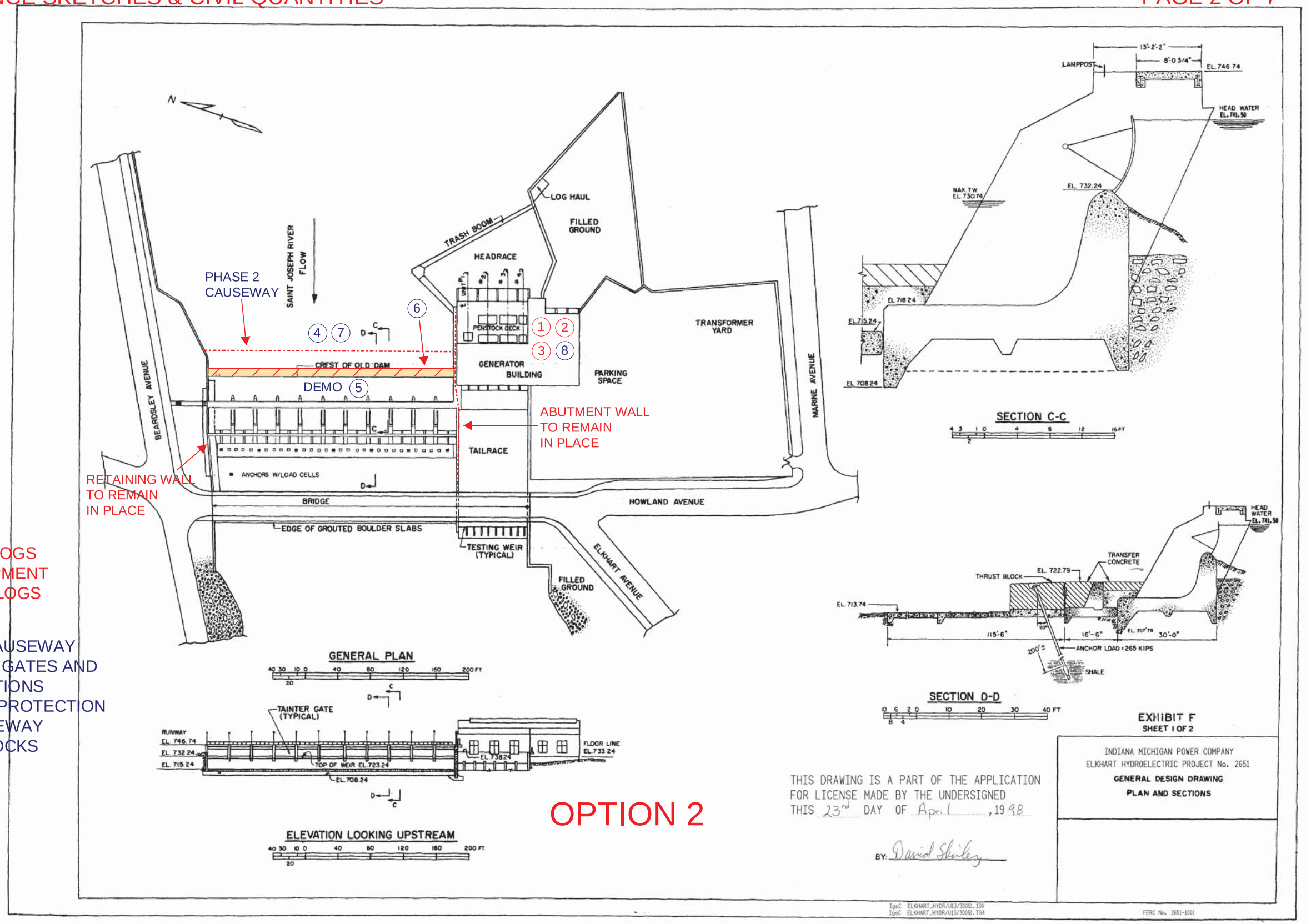
EXHIBIT 4
Elkhart Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

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



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

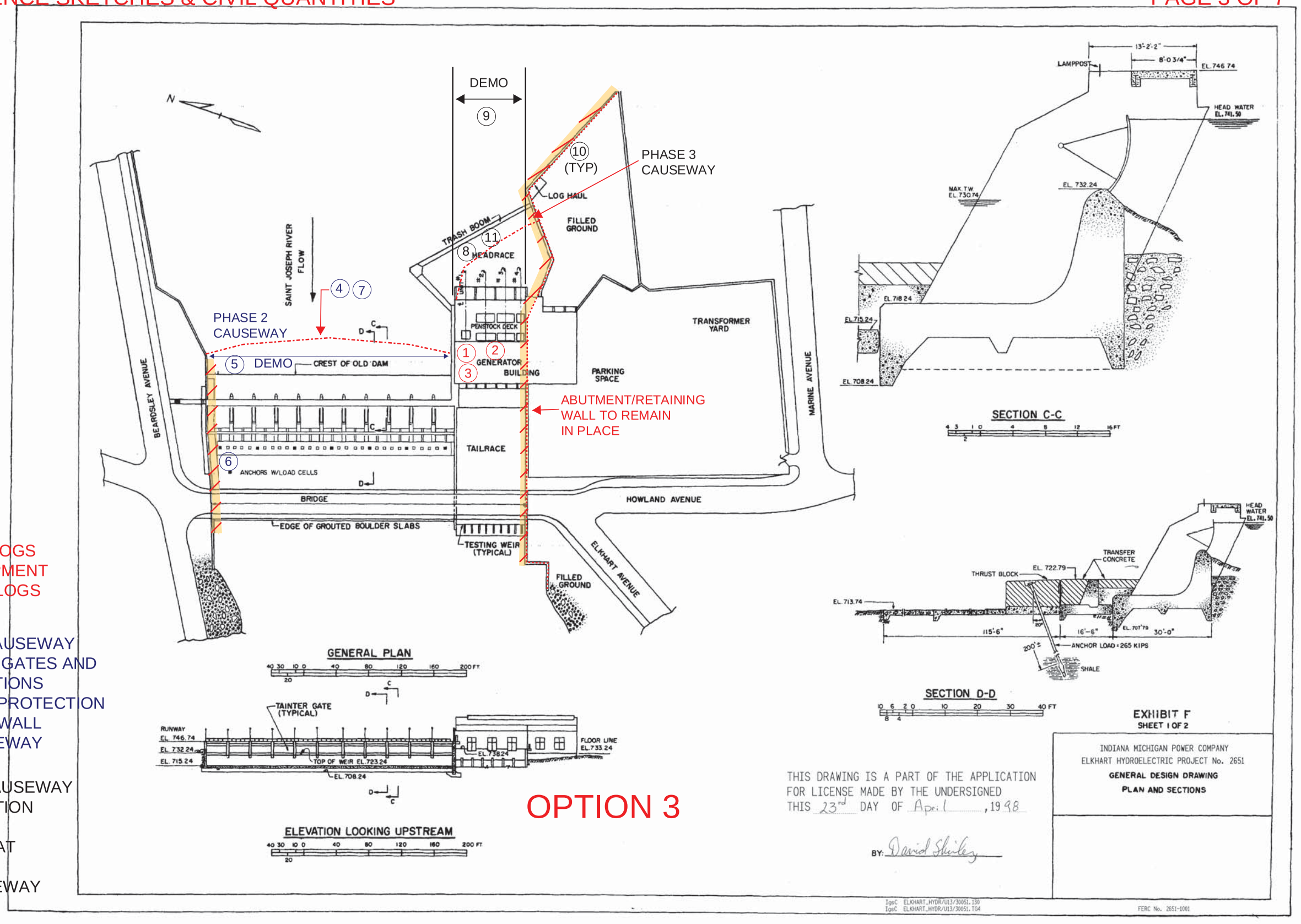
PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO TAINTER GATES AND SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION
7. REMOVE CAUSEWAY
8. GROUT PENSTOCKS

OPTION 2

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

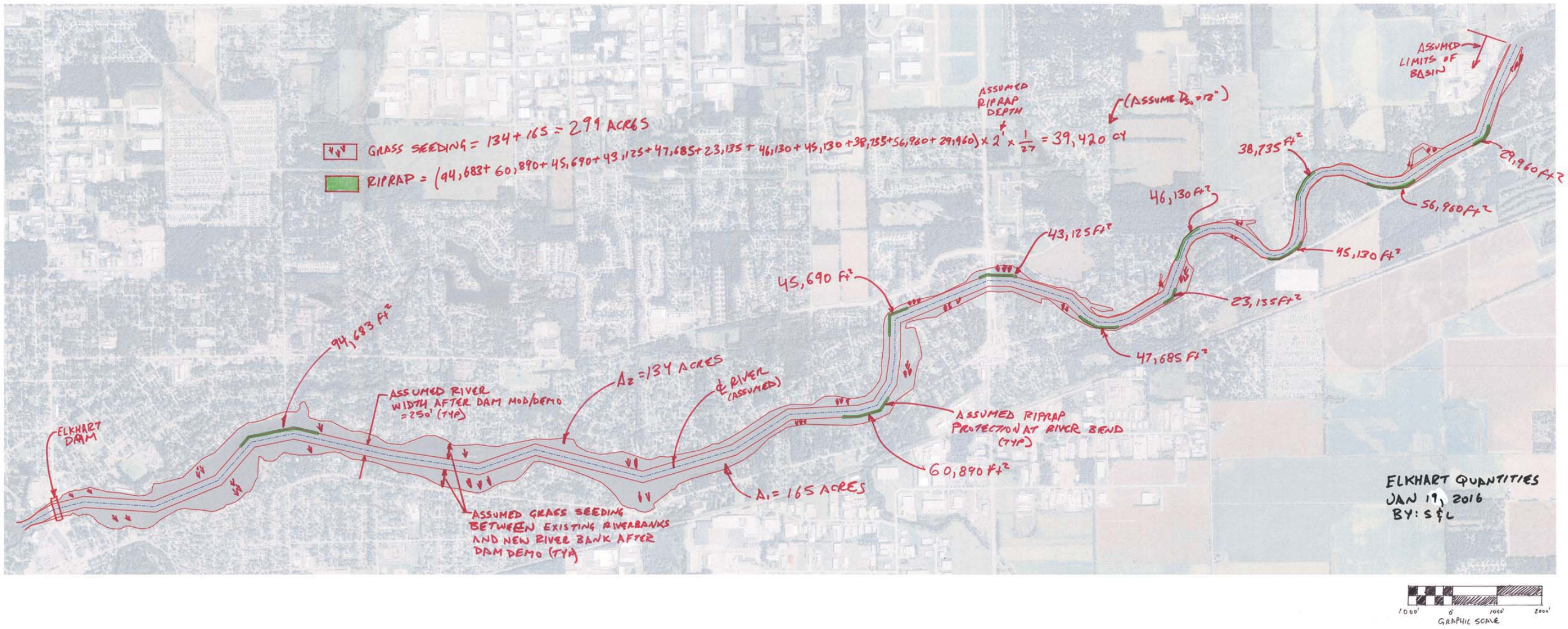


OPTION 3

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"

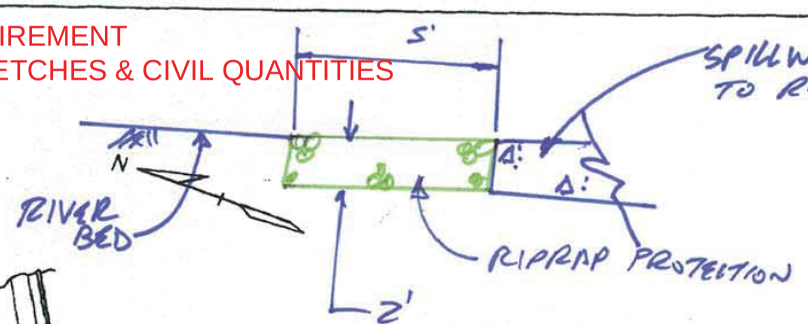
OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	290	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	39,420	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT DAM ABUTMENTS	395	CY	2 ft riprap protection @ D(50)=12"
EARTHWORK CUT AT DAM ABUTMENTS	330	CY	Riverbed removal for riprap placement

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

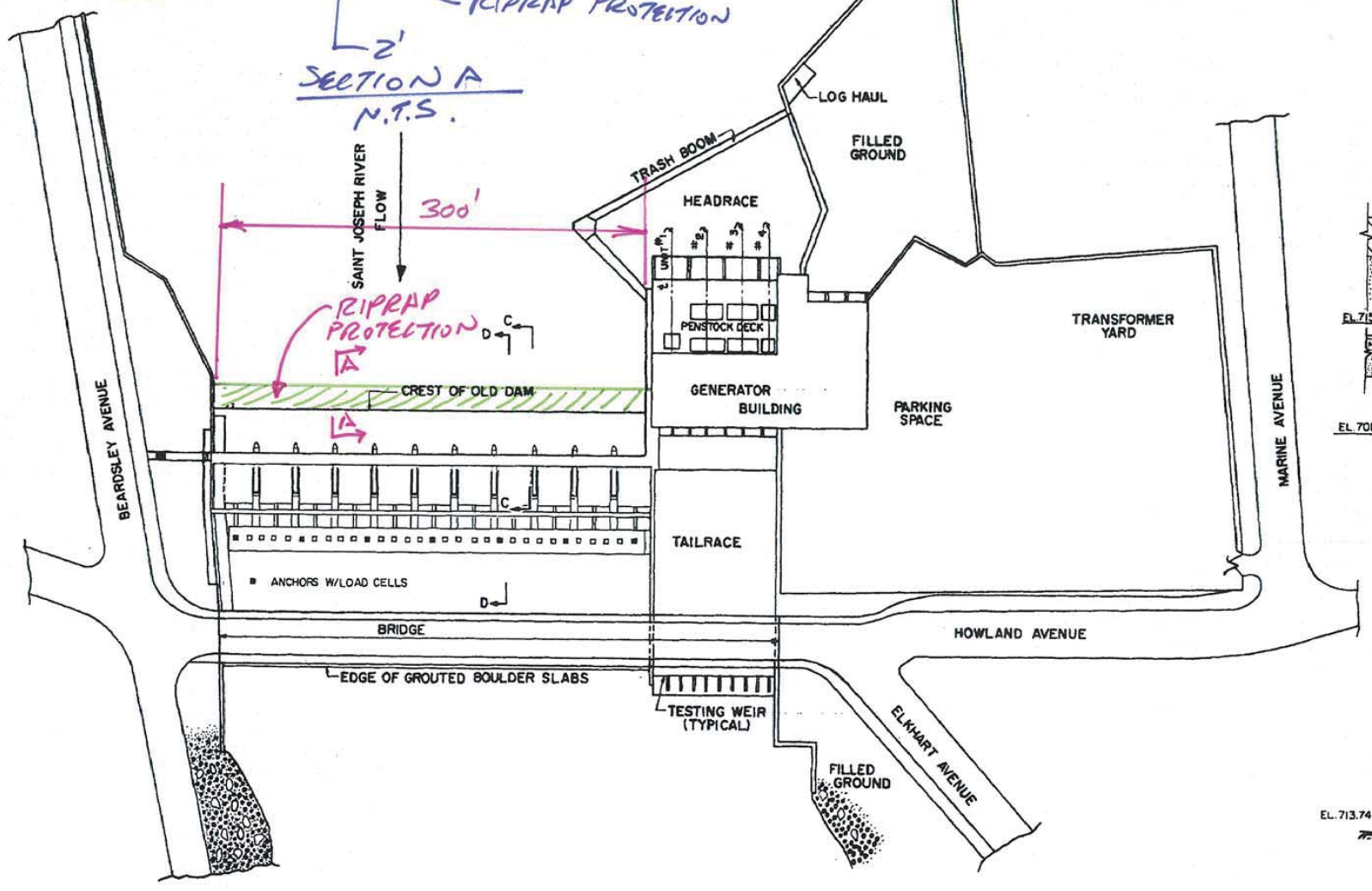

GRASS SEEDING = 134 + 165 = 299 ACRES
RIPRAP = (94,683 + 60,890 + 45,690 + 43,125 + 47,685 + 23,135 + 46,130 + 45,130 + 38,735 + 56,960 + 29,960) x 2' x 1/27 = 39,420 CY
ASSUMED RIPRAP DEPTH
(ASSUME θ = 12°)
ASSUMED LIMITS OF BASIN
38,735 Ft²
29,960 Ft²
46,130 Ft²
56,960 Ft²
43,125 Ft²
45,130 Ft²
45,690 Ft²
23,135 Ft²
47,685 Ft²
94,683 Ft²
60,890 Ft²
ELKHART DAM
ASSUMED RIVER WIDTH AFTER DAM MOD/DEMO = 250' (TYP)
A₂ = 134 ACRES
℄ RIVER (ASSUMED)
A₁ = 165 ACRES
ASSUMED RIPRAP PROTECTION AT RIVER BEND (TYP)
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
N

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

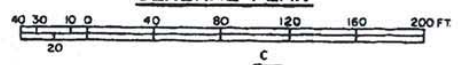
$V_{CUT} = V_{RIPRAP} \simeq 115\ CY$

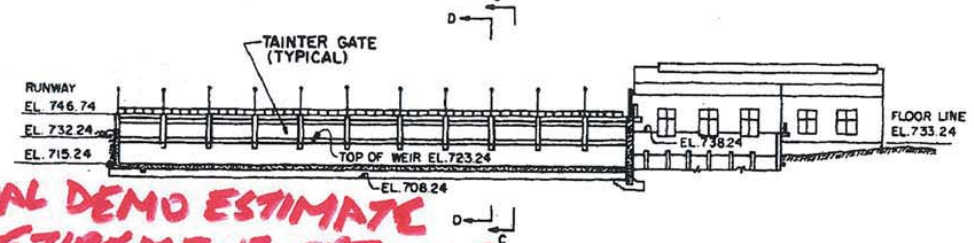


SECTION A
N.T.S.

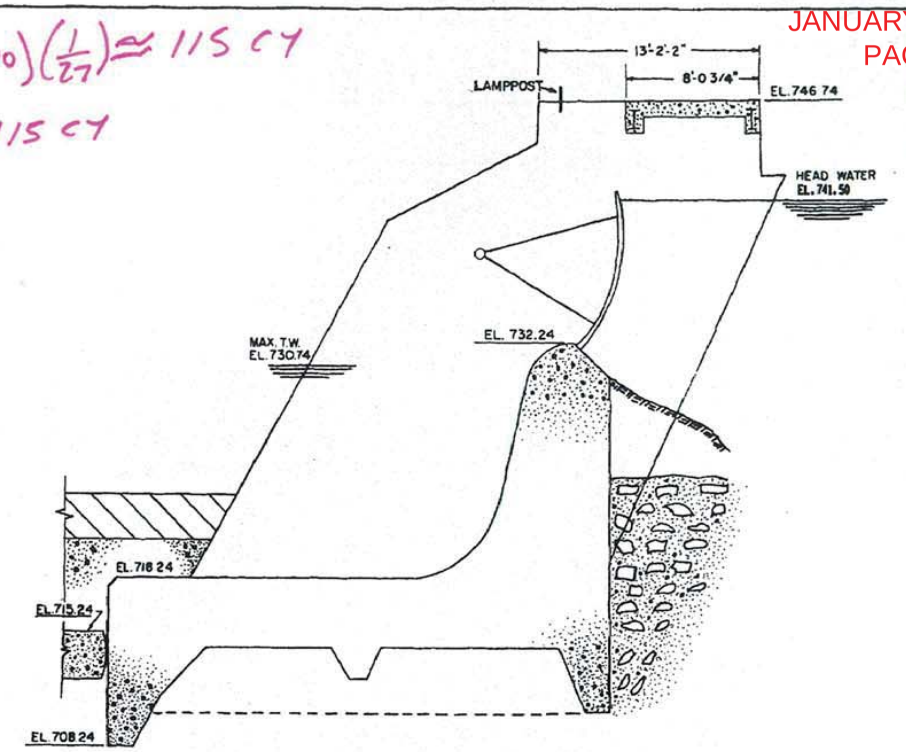


GENERAL PLAN





ELEVATION LOOKING UPSTREAM



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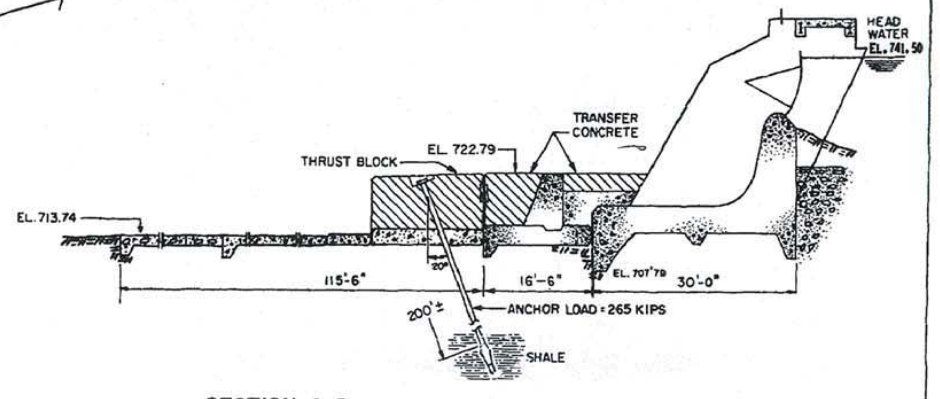

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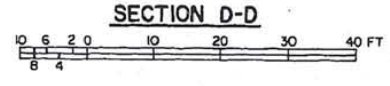


EXHIBIT F
SHEET 1 OF 2

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

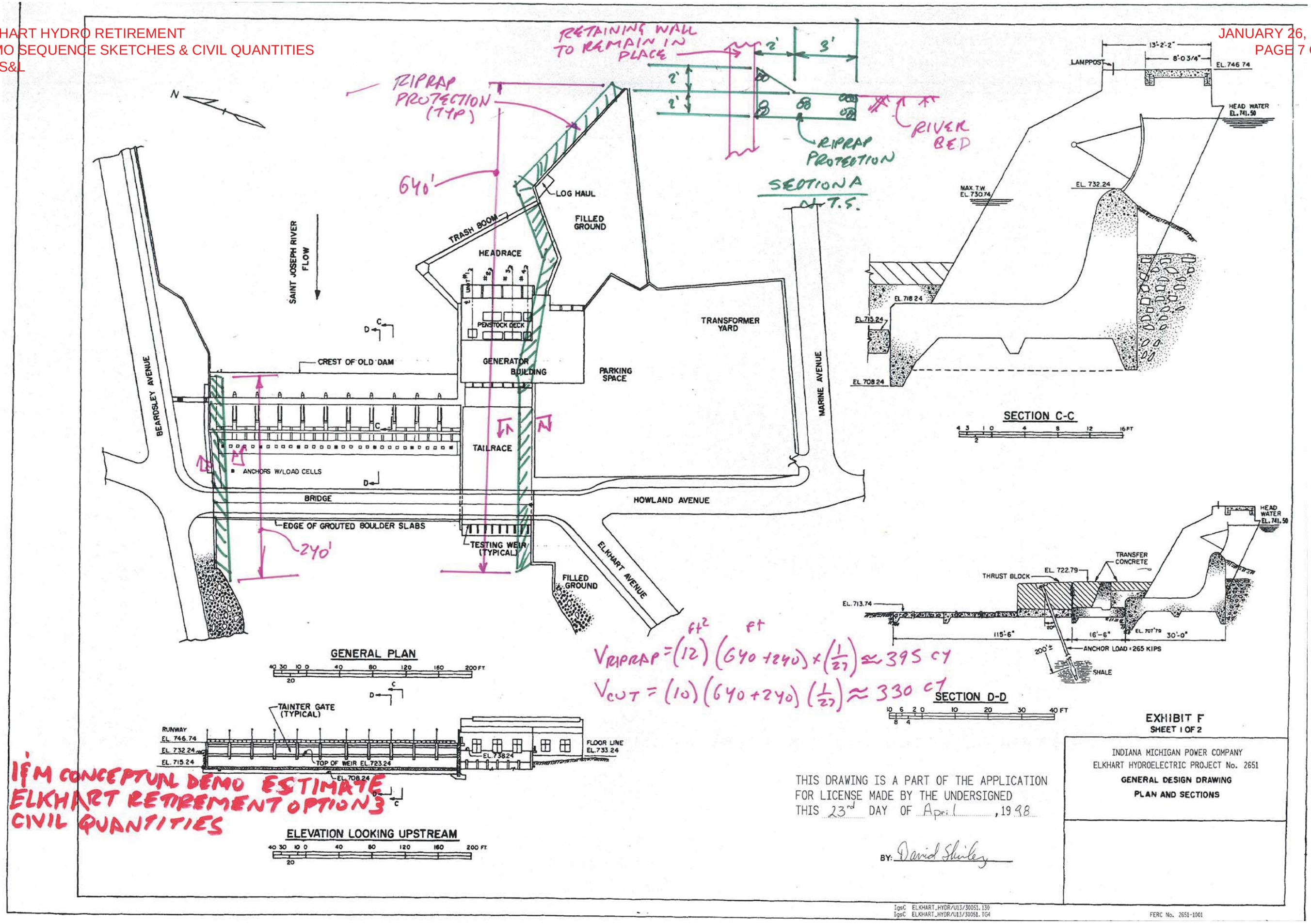
THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 23rd DAY OF April, 1998

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



$V_{RIPRAP} = (12)\,(640+240)\times\left(\frac{1}{27}\right) \approx 395\ CY$ (ft², ft)

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

IF M CONCEPTUAL DEMO ESTIMATE
ELKHART RETIREMENT OPTION 3
CIVIL QUANTITIES

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

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

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

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

February 12, 2016

	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

Sargent & Lundy

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 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***	

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

Sargent & Lundy

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

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

Sargent & Lundy

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

Sargent & Lundy

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

Sargent & Lundy

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

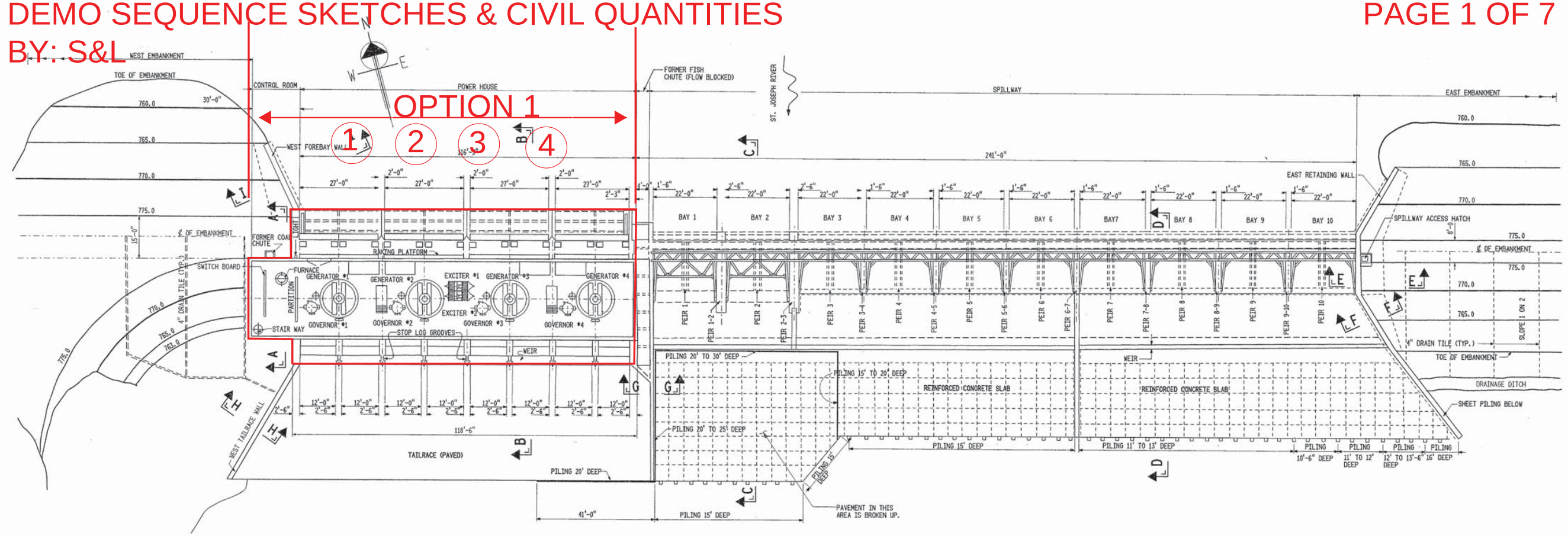
AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

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

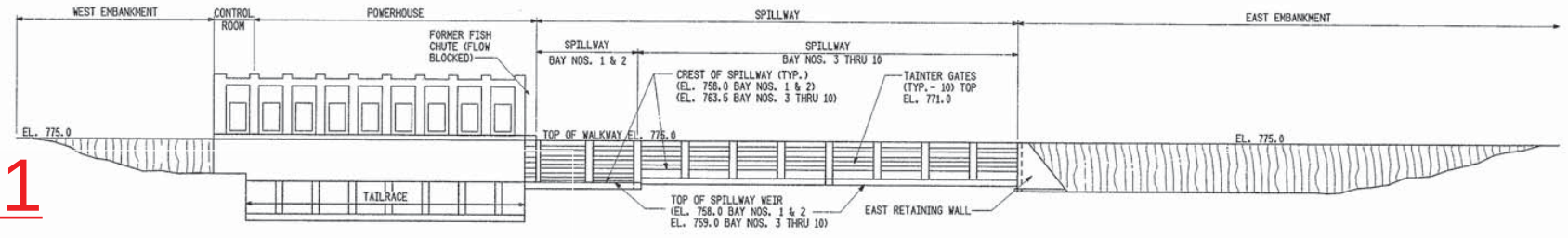
MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016



PLAN

15 10 5 0 15 FEET



OPTION 1

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

ELEVATION LOOKING UPSTREAM

30 20 10 0 30 FEET

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

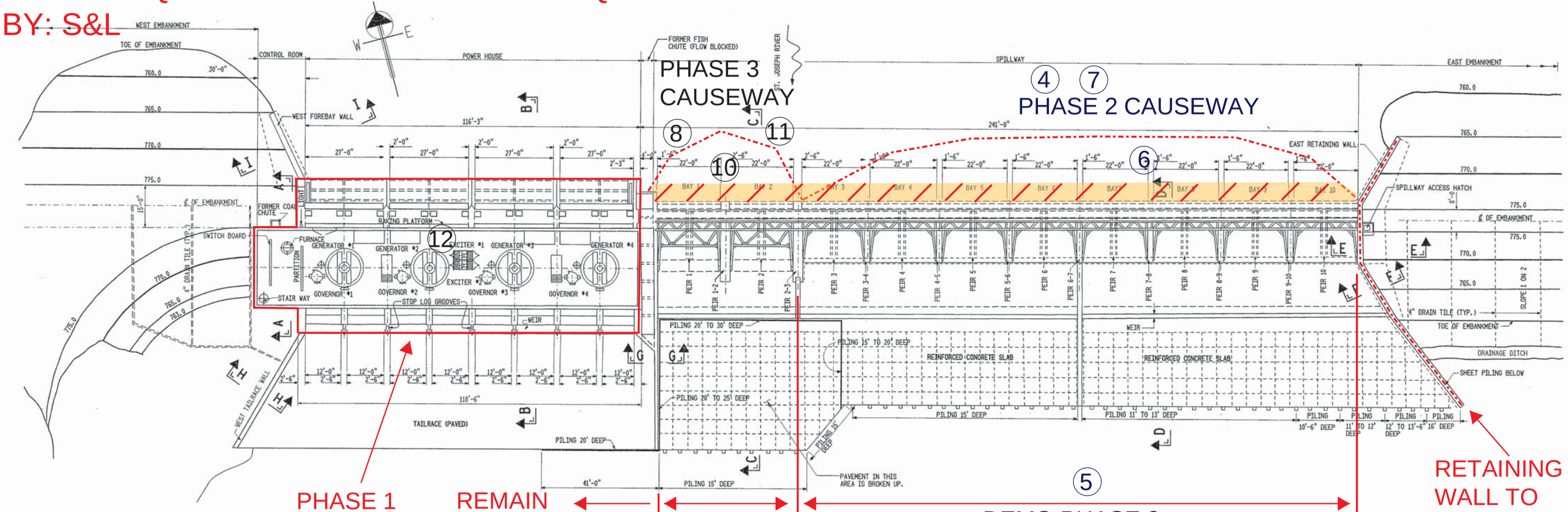
DATE: _____

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

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

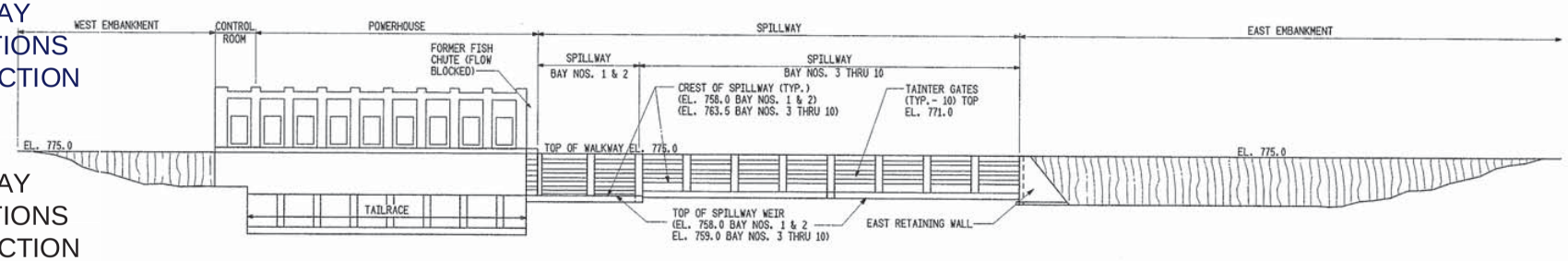
JANUARY 25, 2016



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

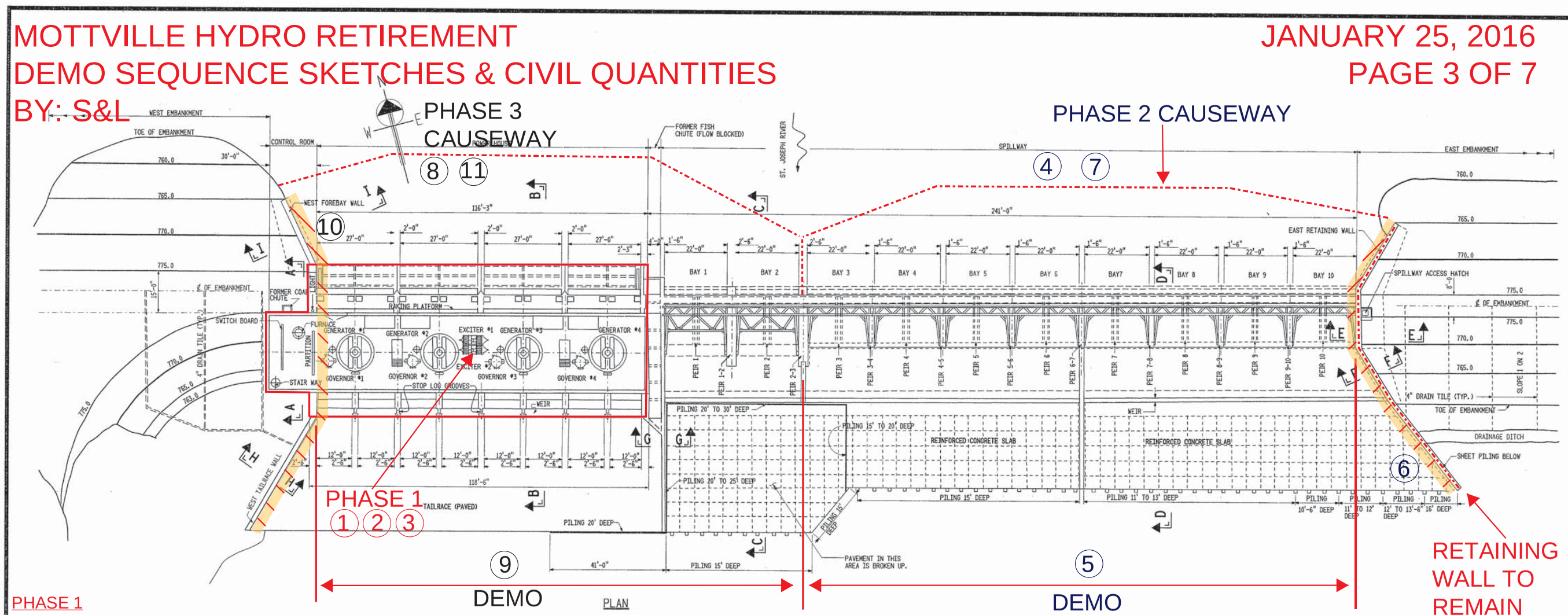
THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

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

JANUARY 25, 2016
PAGE 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: _____

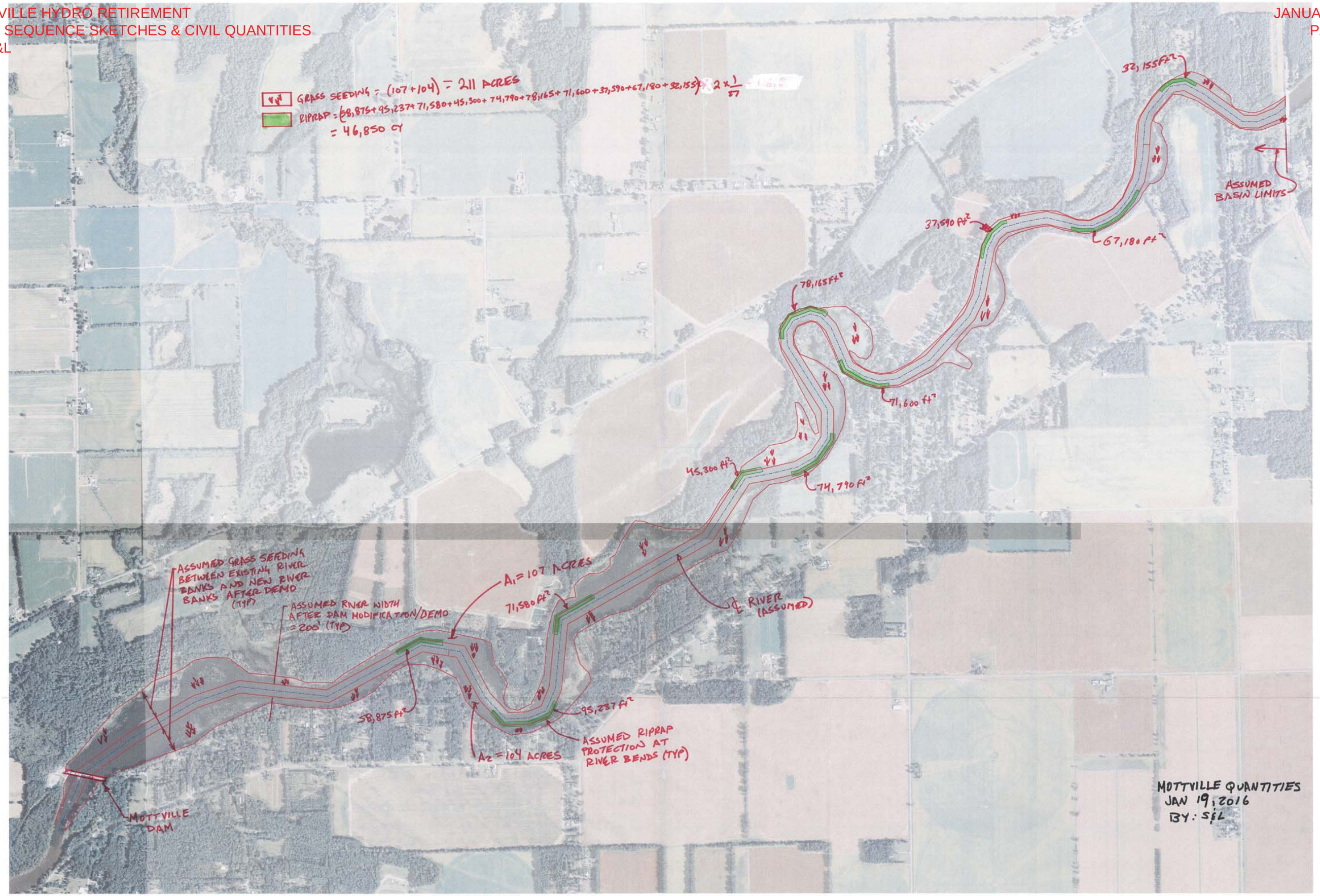
MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

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

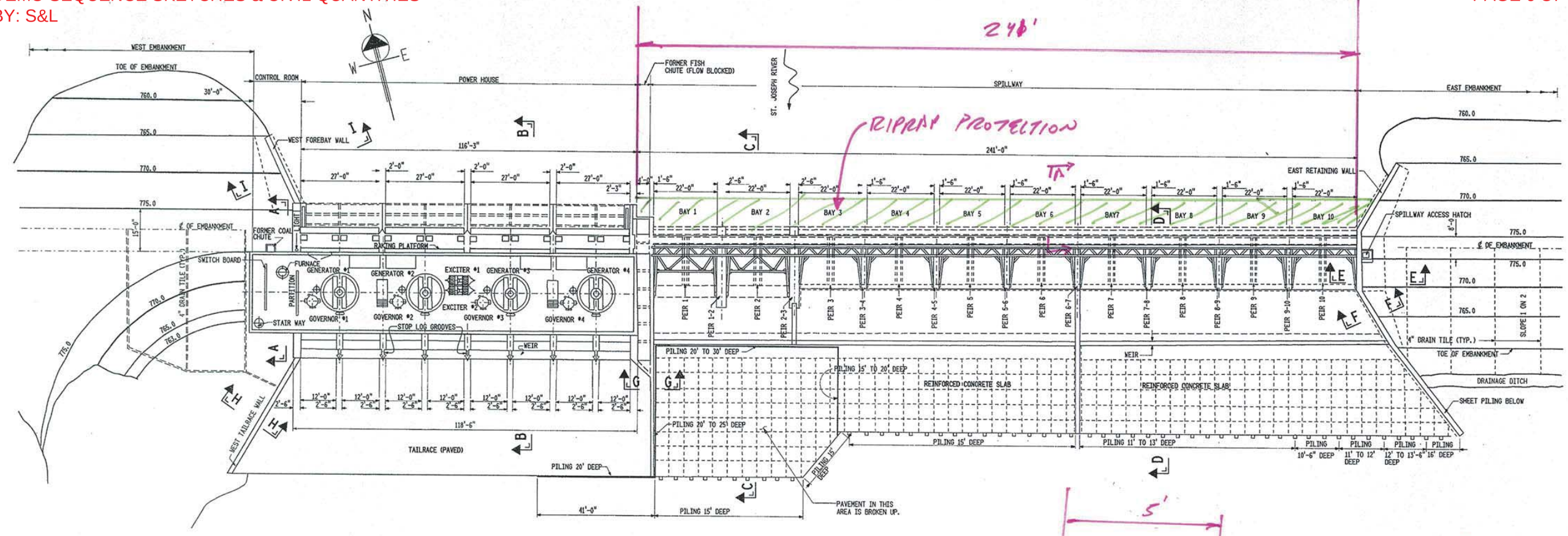
Note:

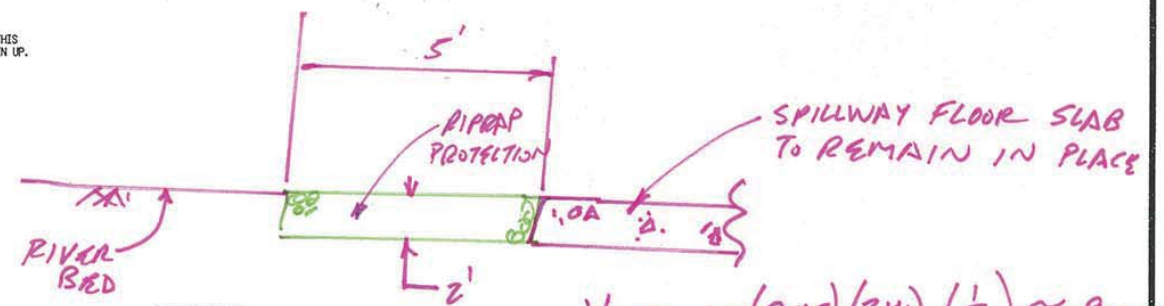
Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg

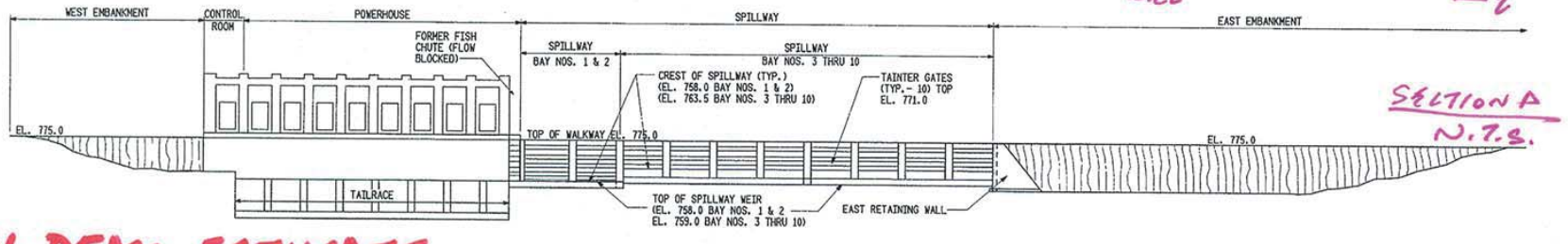

GRASS SEEDING = (107+104) = 211 ACRES
RIPRAP = (58,875+95,237+71,580+45,300+74,790+78,165+71,600+37,590+67,180+32,155) x 2 x 1/27
= 46,850 CY
32,155 Ft²
ASSUMED BASIN LIMITS
37,590 Ft²
67,180 Ft
78,165 Ft²
71,600 Ft²
45,300 Ft²
74,790 Ft²
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DEMO (TYP)
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 200' (TYP)
A1 = 107 ACRES
71,580 Ft²
℄ RIVER (ASSUMED)
58,875 Ft²
95,237 Ft²
ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)
A2 = 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







SECTION A
N.T.S.

1 EM CONCEPTUAL DEMO ESTIMATE
MOTTVILLE RETIREMENT OPTION 2
CIVIL QUANTITIES

EXHIBIT F - 1

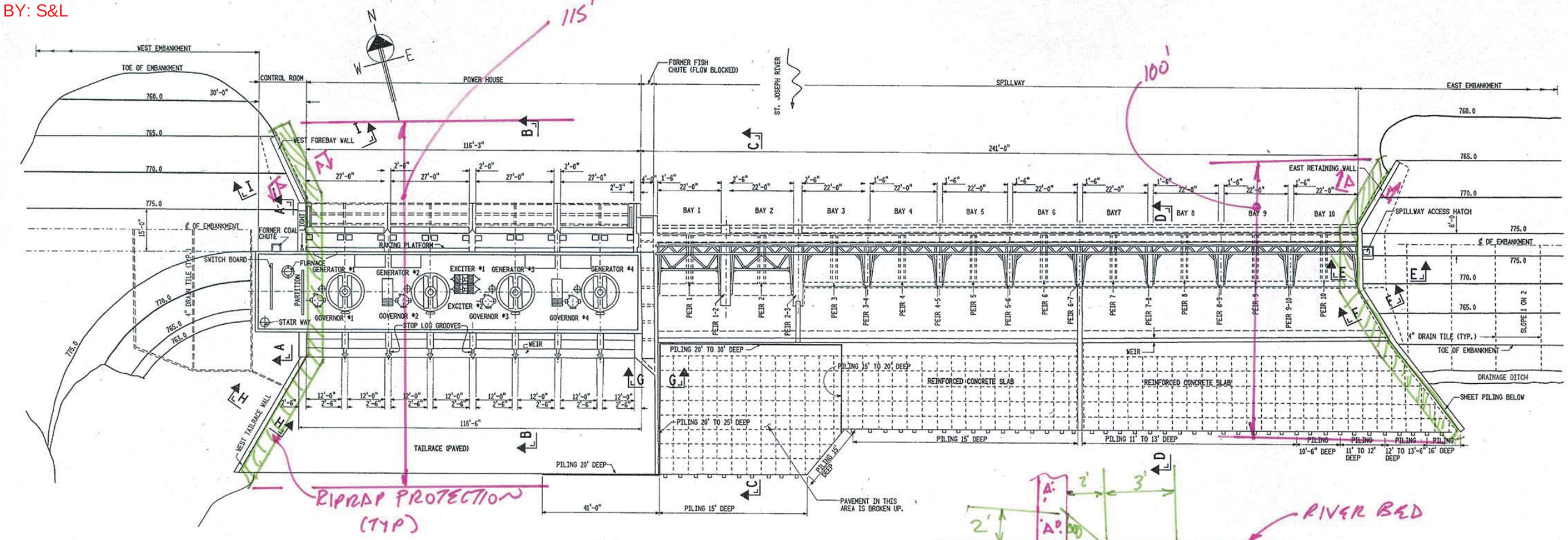
INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

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



$V_{RIPRAP} = (12Ft^2)(115' + 110')\left(\frac{1}{27}\right) = 100\ CY$

$V_{CUT} = (2 \times 5)(115' + 110')\left(\frac{1}{27}\right) \approx 85\ CY$

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

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 RC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan	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.

.

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

February 12, 2016

	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

Sargent & Lundy

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***	

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

Sargent & Lundy

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

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

Sargent & Lundy

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

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

Sargent & Lundy

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

Sargent & Lundy

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

Sargent & Lundy

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

Sargent & Lundy

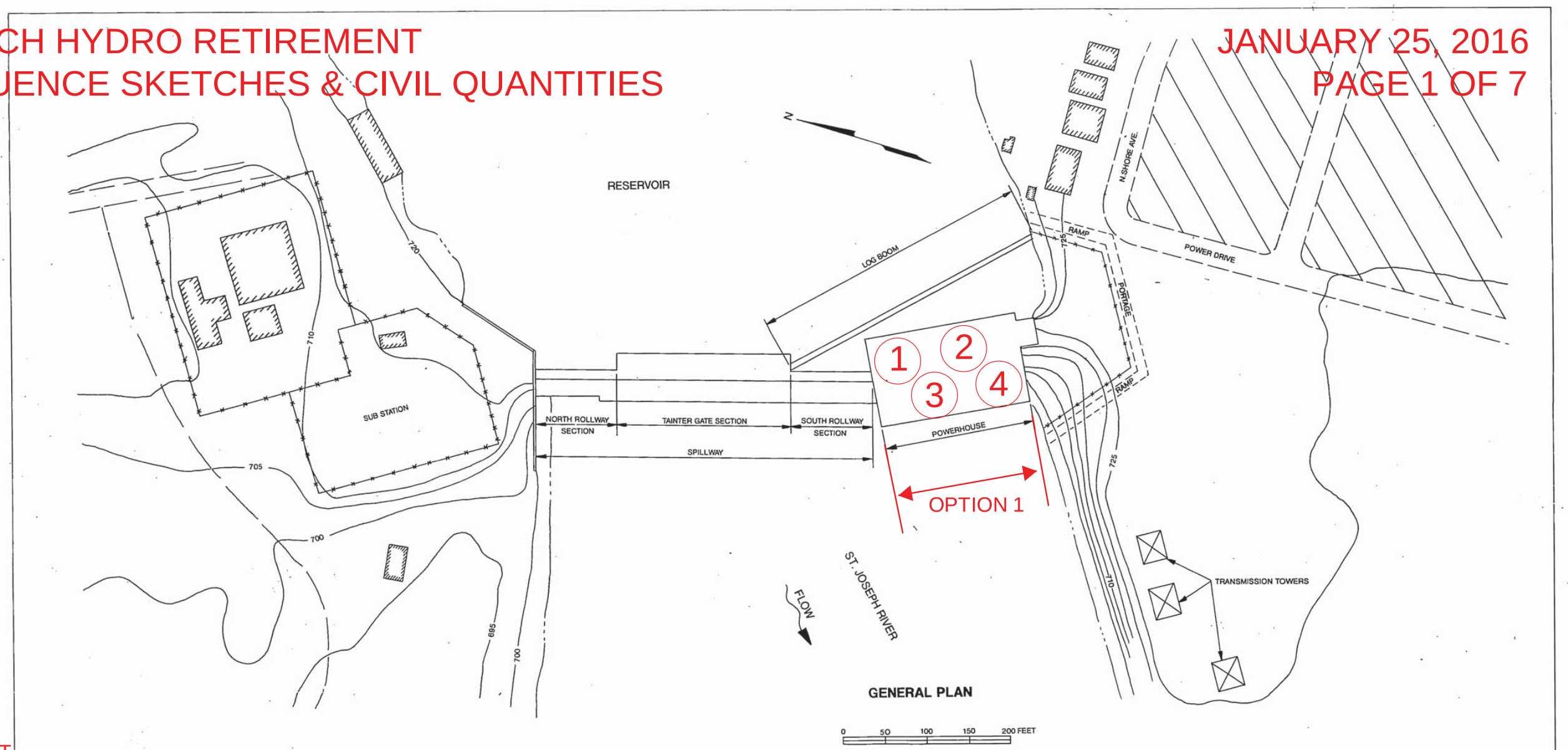
Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL/DISPOSAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING 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

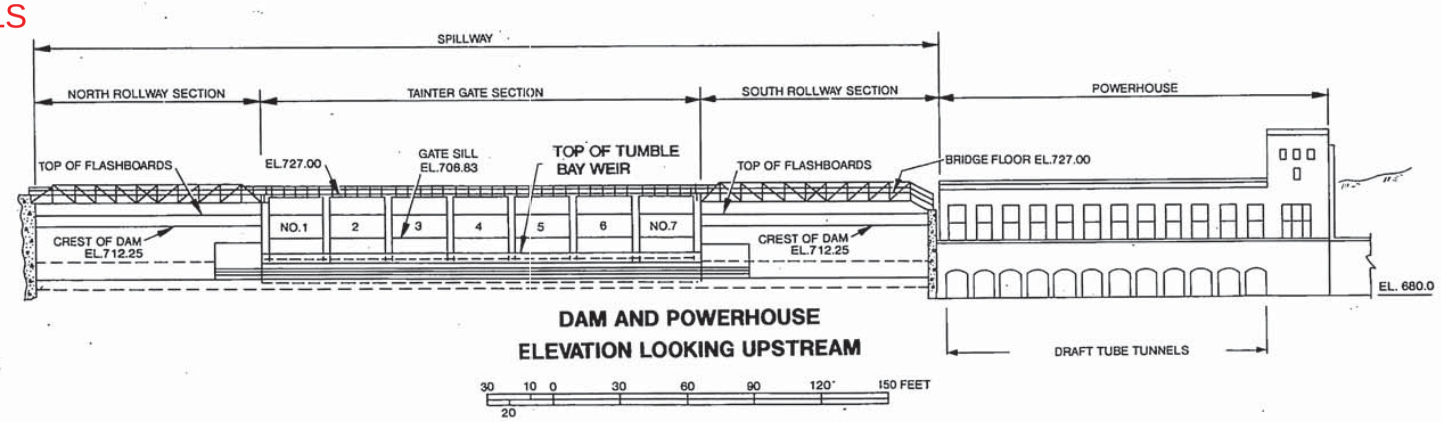
EXHIBIT 4
Twin Branch Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

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

JANUARY 25, 2016
PAGE 1 OF 7

OPTION 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③GROUT DRAFT TUBE TUNNELS
④REMOVE STOPLOGS





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

BY B.H. Brandt

DATE 10/31/91

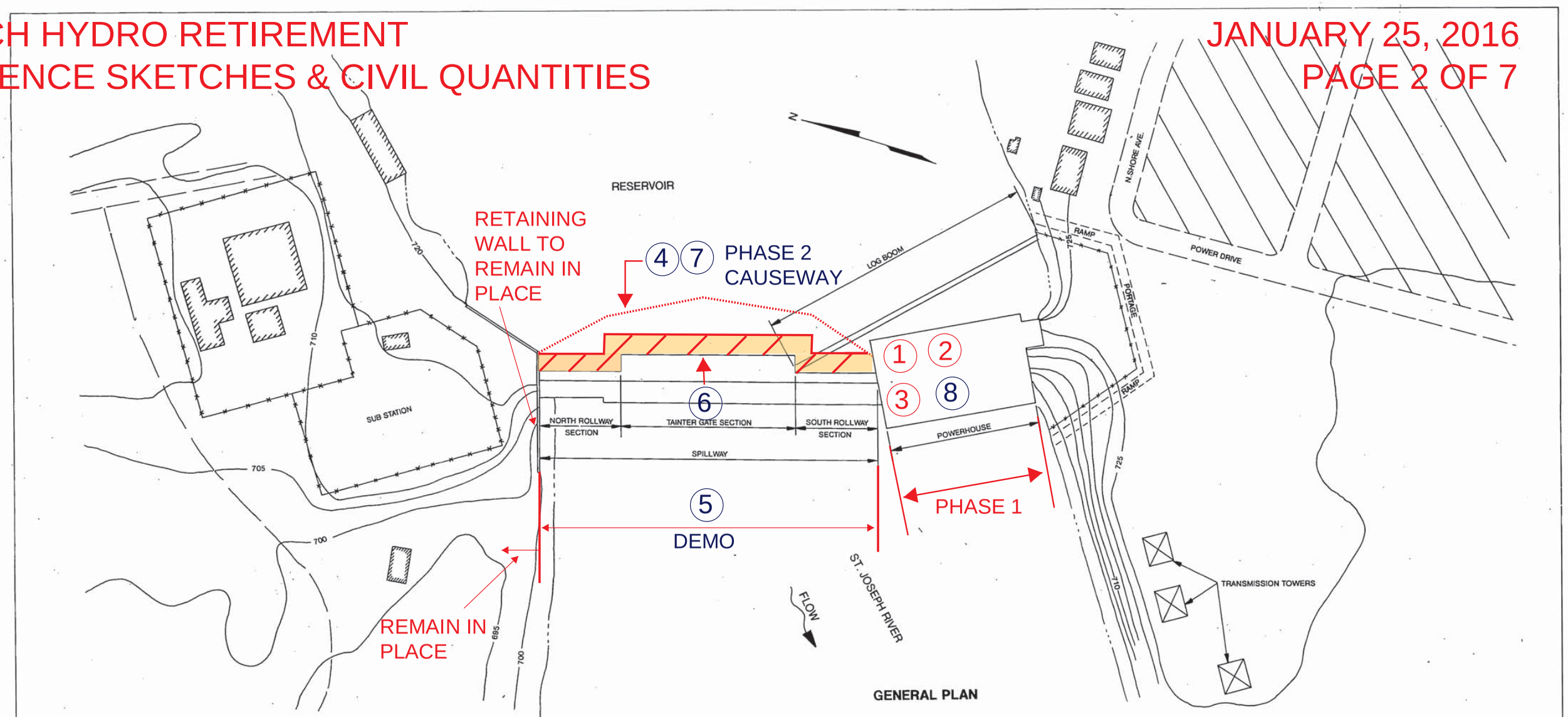
EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

FERC NO. 2579 - 010 - 1

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

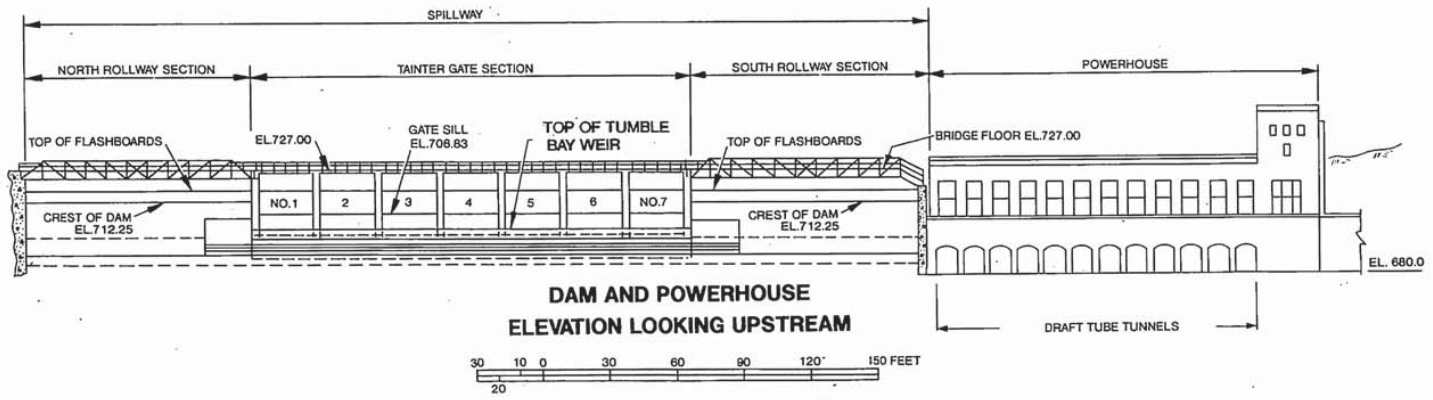
JANUARY 25, 2016



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



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

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BY B.H. Bonnell
DATE 10/31/91

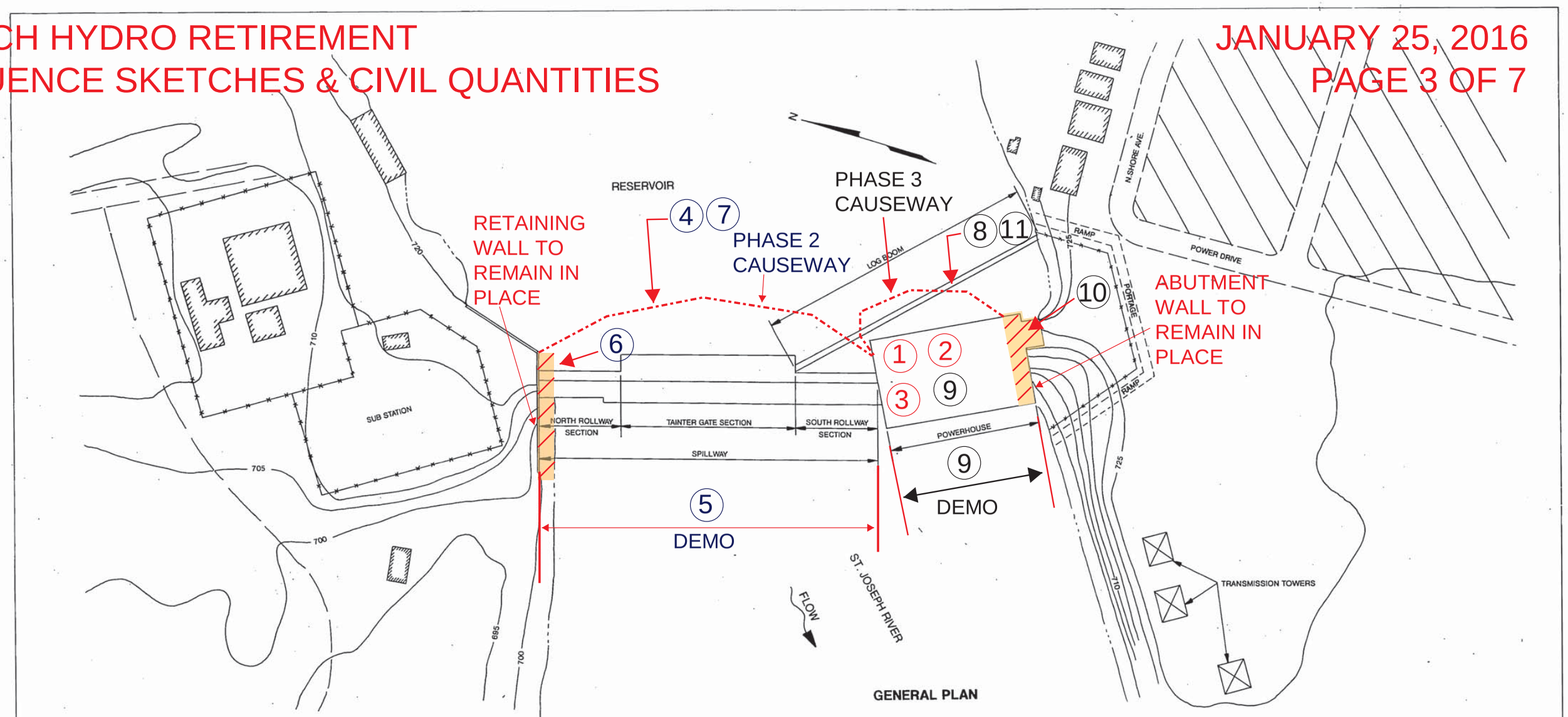
EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

FERC NO. 2579 – 010 – 1

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

JANUARY 25, 2016
PAGE 3 OF 7

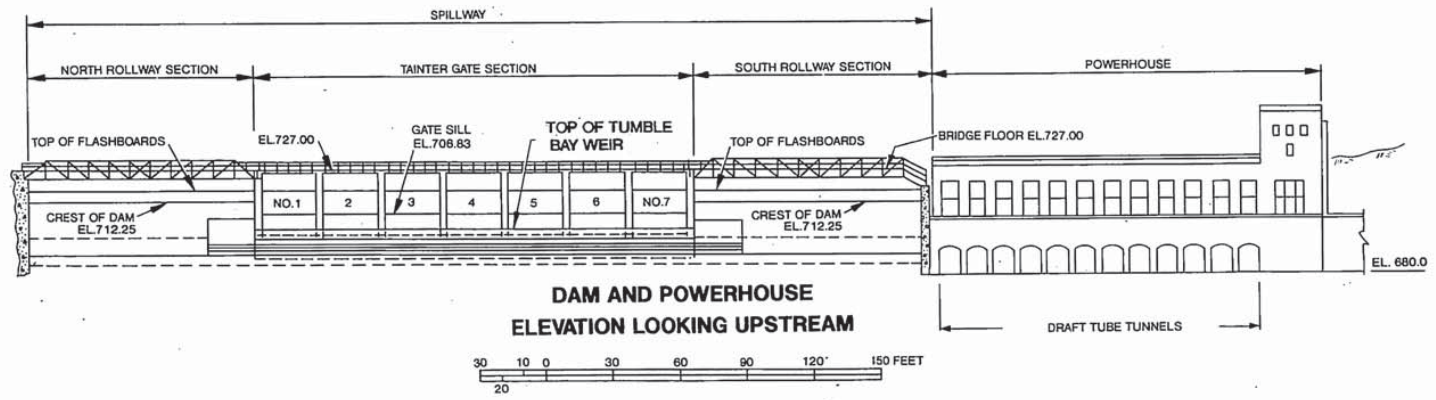


PHASE 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③REMOVE STOPLOGS

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

OPTION 3



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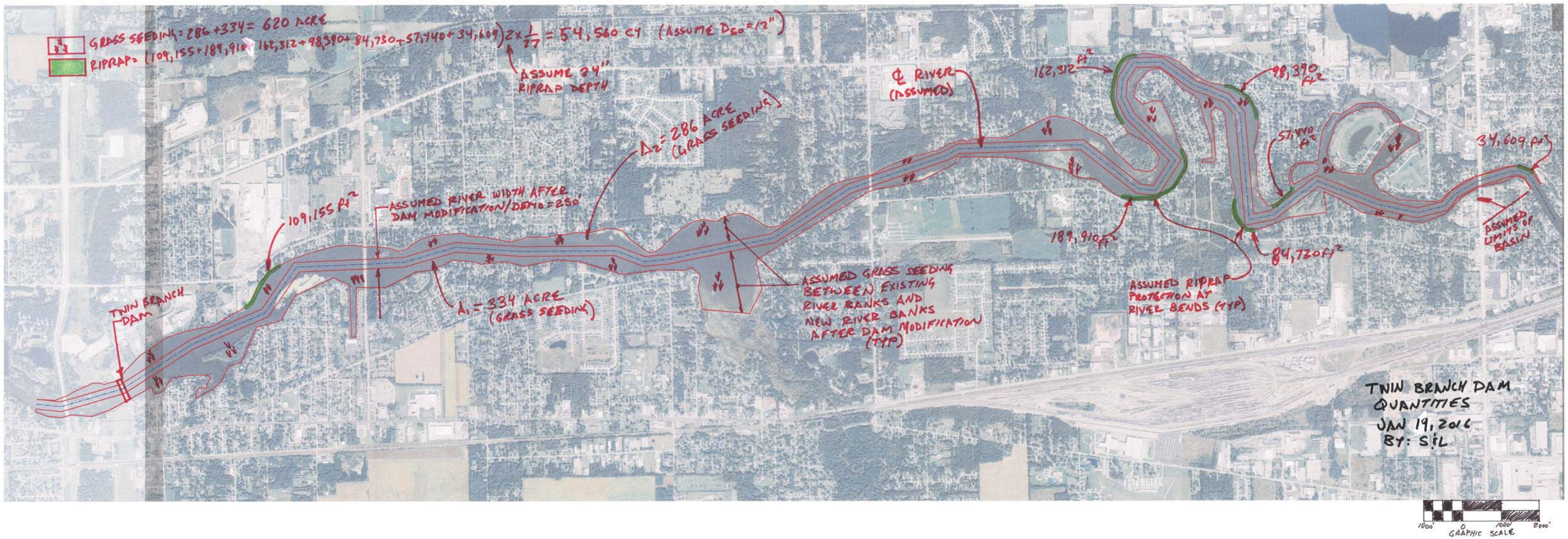
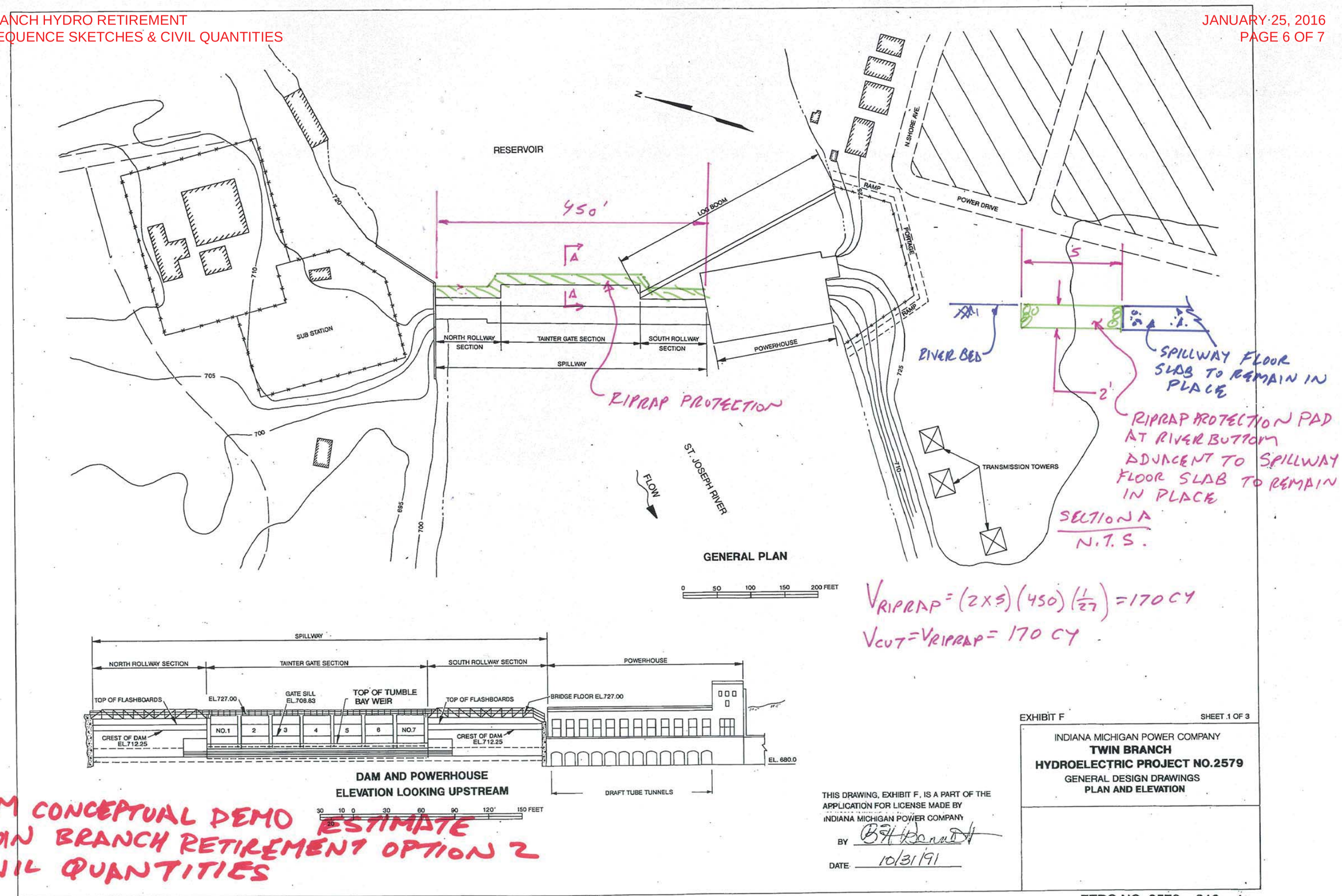
INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

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 + 84,720 + 57,440 + 34,609) 2 x 1/27 = 54,560 CY (ASSUME D50 = 12")
ASSUME 24" RIPRAP DEPTH
℄ RIVER (ASSUMED)
162,312 ft²
98,390 ft²
57,440 ft²
34,609 ft²
A2 = 286 ACRE (GRASS SEEDING)
109,155 ft²
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 250'
A1 = 334 ACRE (GRASS SEEDING)
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DAM MODIFICATION (TYP)
189,910 ft²
84,720 ft²
ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)
ASSUMED LIMITS OF BASIN
TWIN BRANCH DAM
TWIN BRANCH DAM QUANTITIES
JAN 19, 2016
BY: S&L
1000' 0 1000' 2000'
GRAPHIC SCALE
N



$V_{RIPRAP} = (2 \times 5)(450)\left(\frac{1}{27}\right) = 170\ CY$

$V_{CUT} = V_{RIPRAP} = 170\ CY$

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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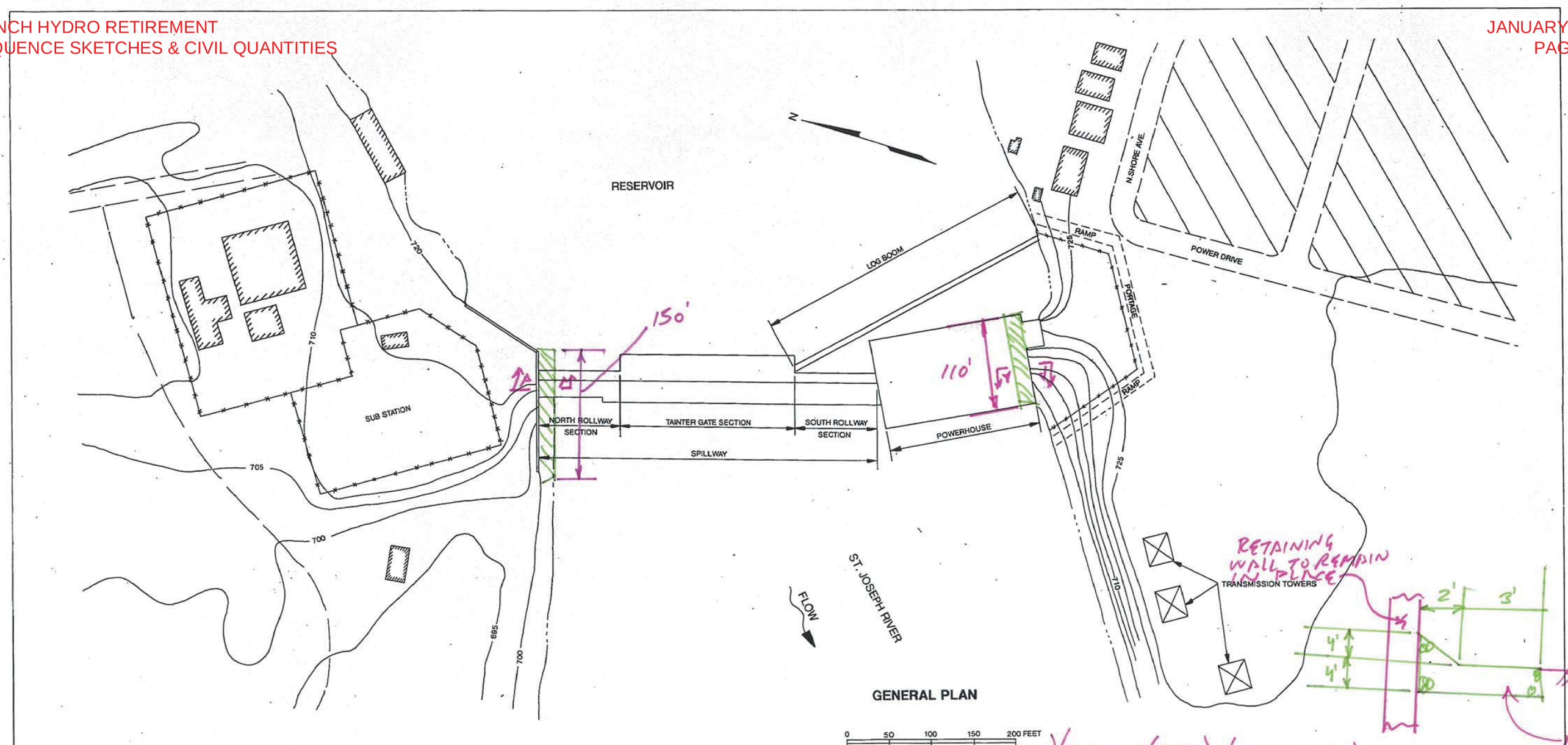
BY B.H. Barnett

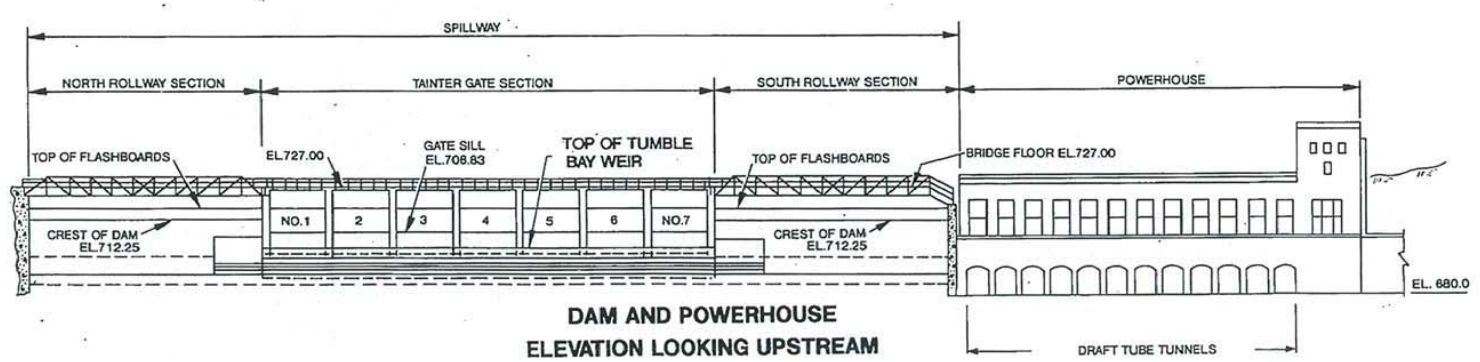
DATE 10/31/91

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



GENERAL PLAN

0 50 100 150 200 FEET



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

30 20 10 0 30 60 90 120' 150 FEET

$V_{RIPRAP} = (12Ft^2)(150+110)(\frac{1}{27}) \approx 170\ CY$

$V_{CUT} = (2 \times 5)(150+110)(\frac{1}{27}) \approx 100\ CY$

EXHIBIT F SHEET 1 OF 3

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TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

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BY B.H. Bennett

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FERC NO. 2579 – 010 – 1

I & M CONCEPTUAL DEMO ESTIMATE
TWIN BRANCH RETIREMENT OPTION 3
CIVIL QUANTITIES