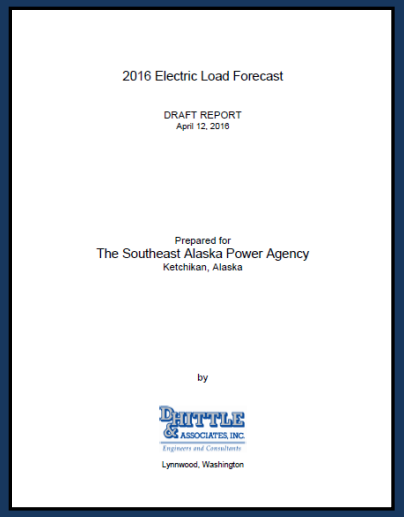
SEAPA Board of Director's Meeting

Ketchikan-April 28, 2016

Director of Special Projects Report

SEAPA Board of Director's Meeting- Over-View


2016 Electric Load Forecast

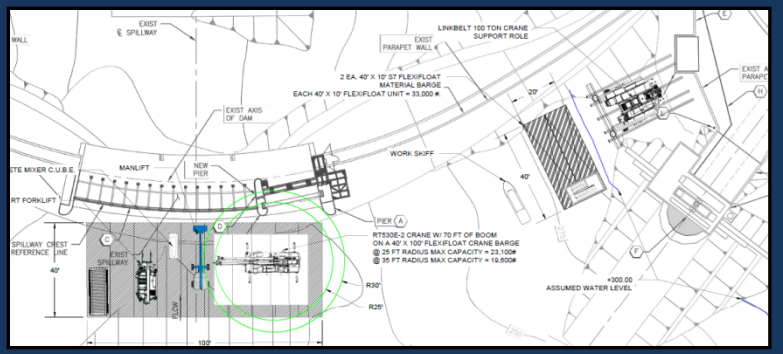
DRAFT REPORT
April 12, 2016

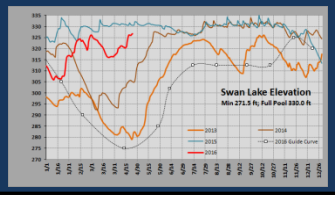
Prepared for
The Southeast Alaska Power Agency
Ketchikan, Alaska

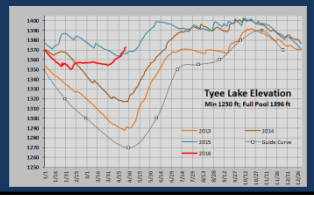
by

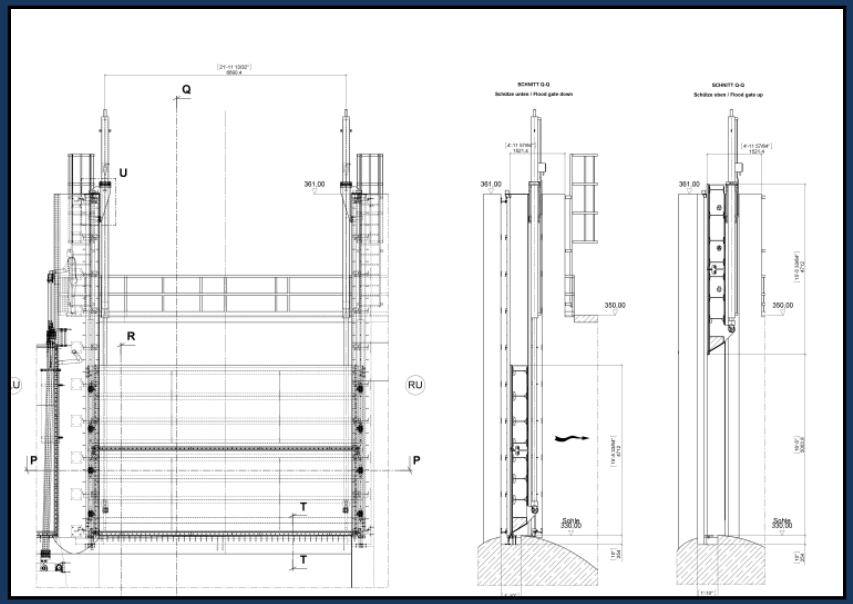
DITTLE & ASSOCIATES, INC.
Engineers and Consultants

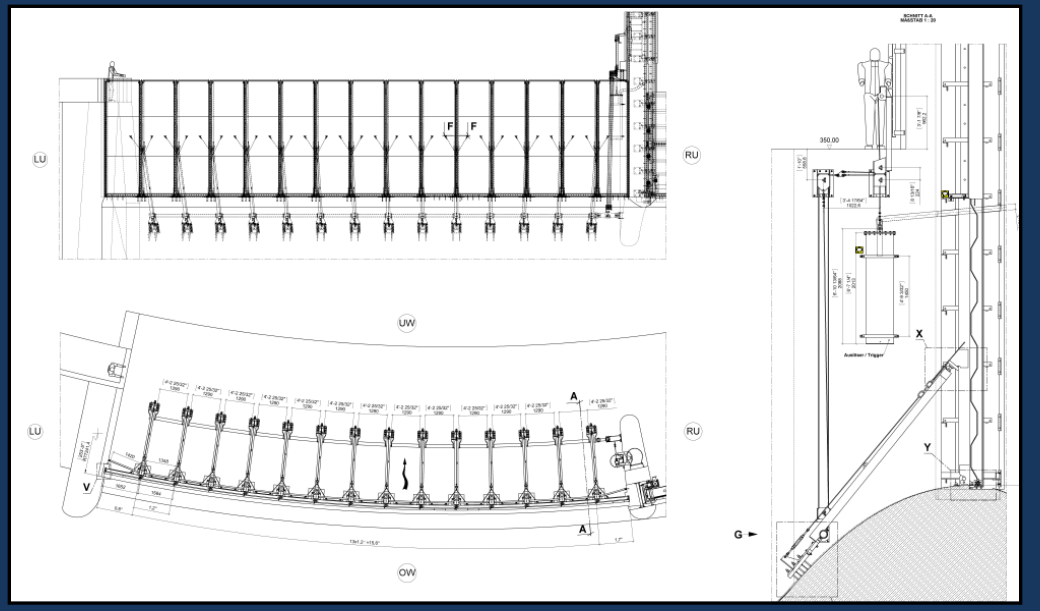
Lynnwood, Washington











SEAPA Board of Director's Meeting-Load Forecast

- D.Hittle Retained February 2015
- Collected Data from Municipality Utilities and from SEAPA during the spring and summer of 2015
- Developed incremental report segments for 8 months and staff kept the Board Appraised of progress
- Issued Draft Report April 12th, there are a few mistakes (mostly typos) that we want to clear up before we release the report to the Municipal Utilities

SEAPA Board of Director's Meeting-Load Forecast

For the last three years, 2014, 2015, 2016 WRG, PSG, and KTN have enjoyed a hydro generation surplus , our electrical system is 100% renewable, this is quite an achievement for a region with the lowest electrical rates in Alaska, rates by the way competitive with the Pacific NW

About 1% of our total area load is from diesel generation in support of maintenance activity

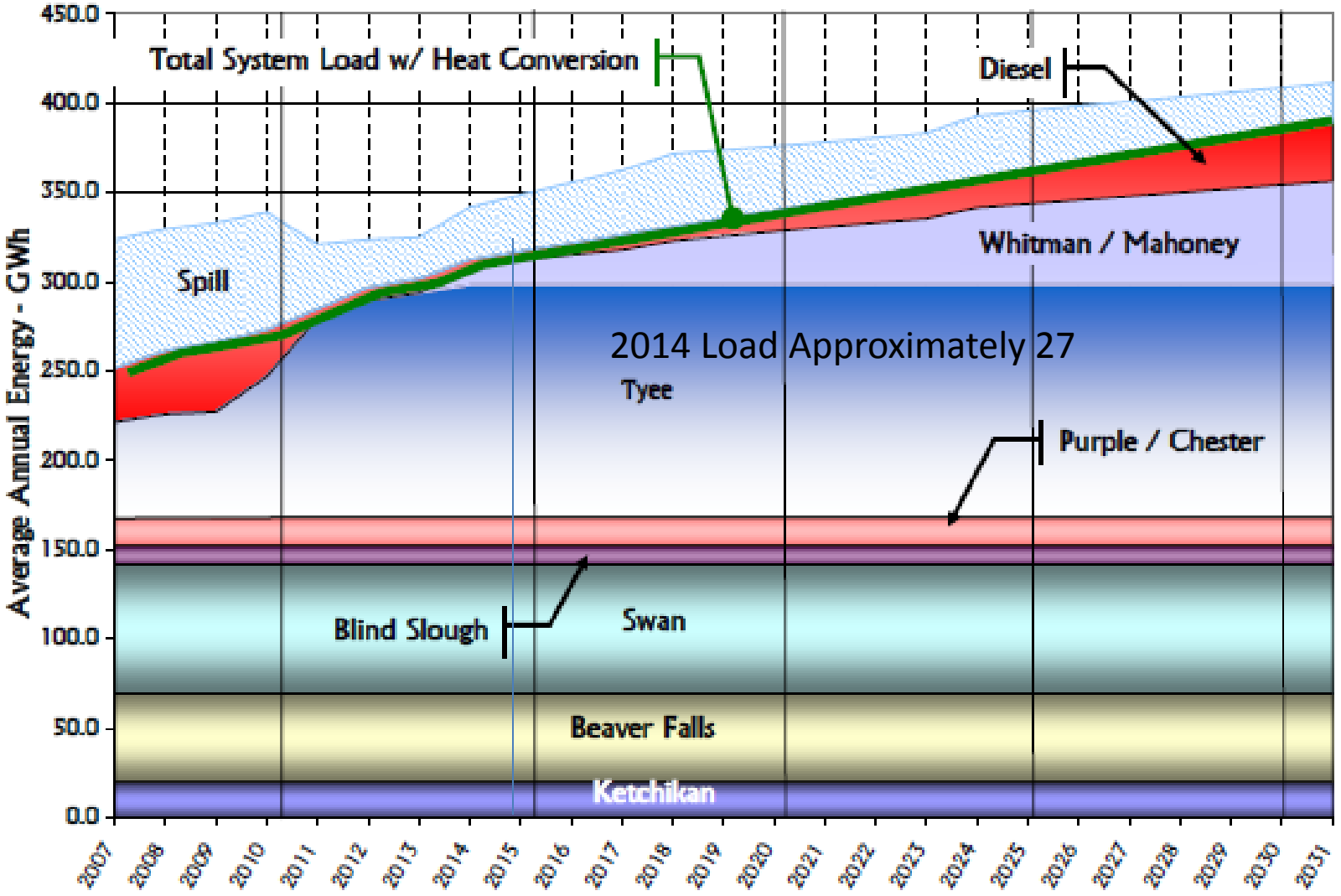
Table of Diesel Generation and Spilled Energy (MWh)

Calendar Year	KPU Hydro MWh	KPU Diesel MWh	Swan Lake Spill (MWh)	KPU Load MWh	KPU Diesel % KPU Load	WRG & PSG Diesel	Total Area Load PSG-WRG-KTN	% Diesel Total Area	% Total Area as Renewable
2010	75,839	1,550	5,248	169,036	0.9%	1,163	250,873	1.1%	98.9%
2011	82,413	4,609	14,057	175,915	2.6%	975	266,188	2.1%	97.9%
2012	85,646	2,277	10,239	181,932	1.3%	960	275,845	1.2%	98.8%
2013	74,715	12,213	0	178,260	6.9%	1,324	274,096	4.9%	95.1%
2014	86,755	1,766	17,568	176,444	1.0%	1,400	271,861	1.2%	98.8%
2015	91,619	1,024	52,187	174,919	0.6%	768	267,604	0.7%	99.3%

The 2011 SEIRP Projected Energy balance (MWh)

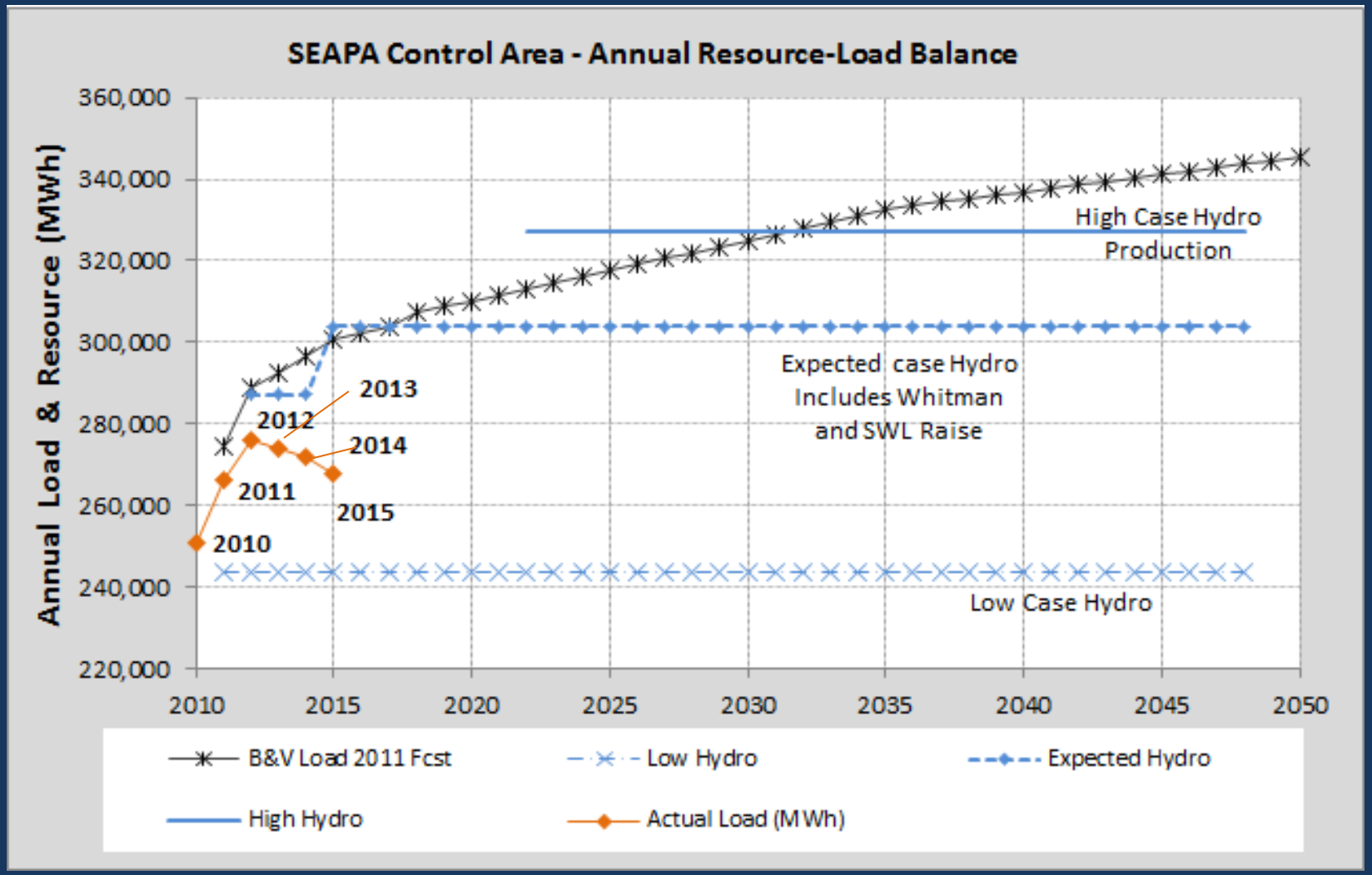
	Total Load	Diesel Generation	% Diesel
2016	302,295	10,018	3.3
2030	325,030	24,570	7.6

Load Forecast-Load Forecast Discussion



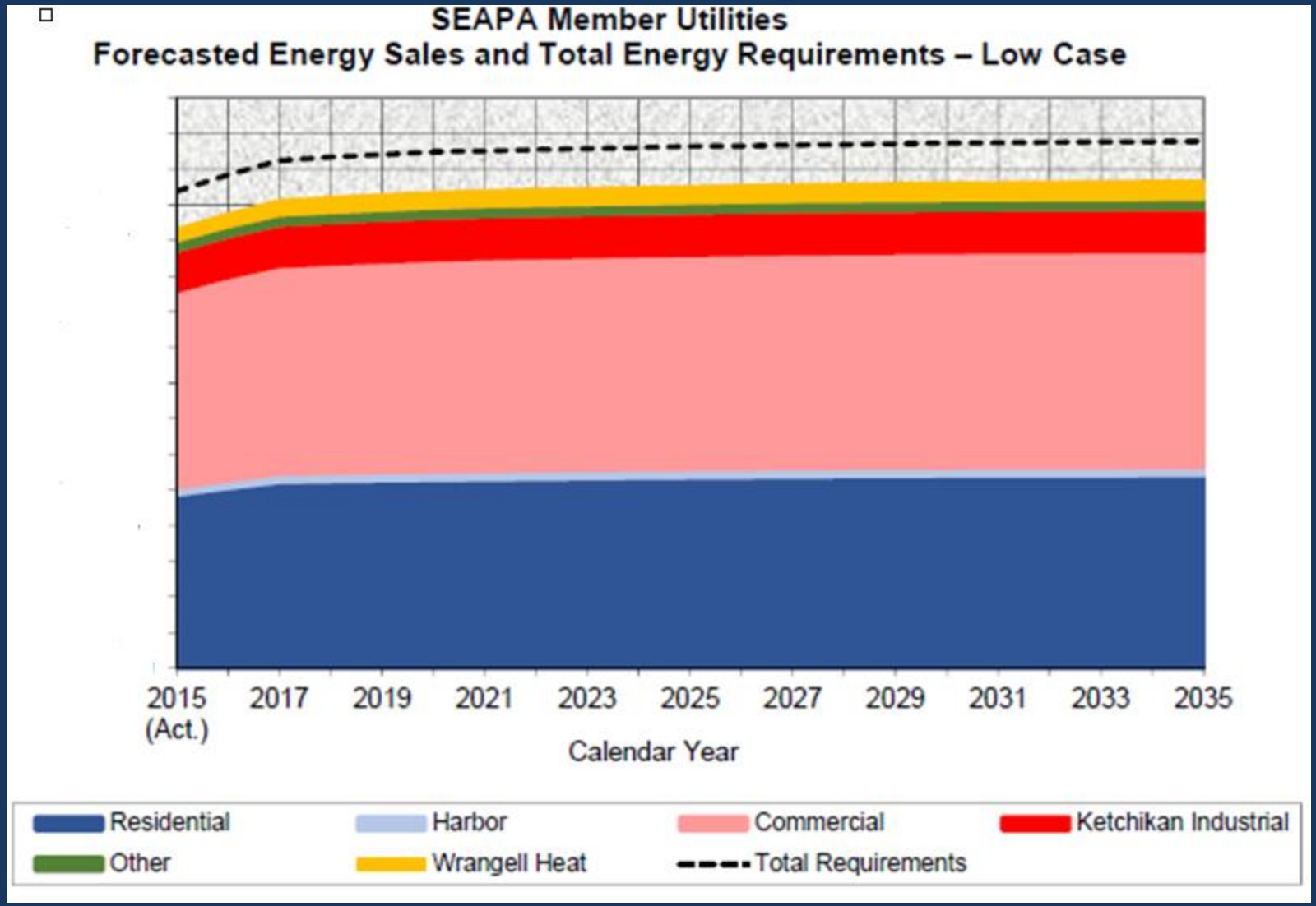
Hatch due Diligence report on the Mahoney Project, June 2008

SEAPA Board of Director's Meeting-Load Forecast

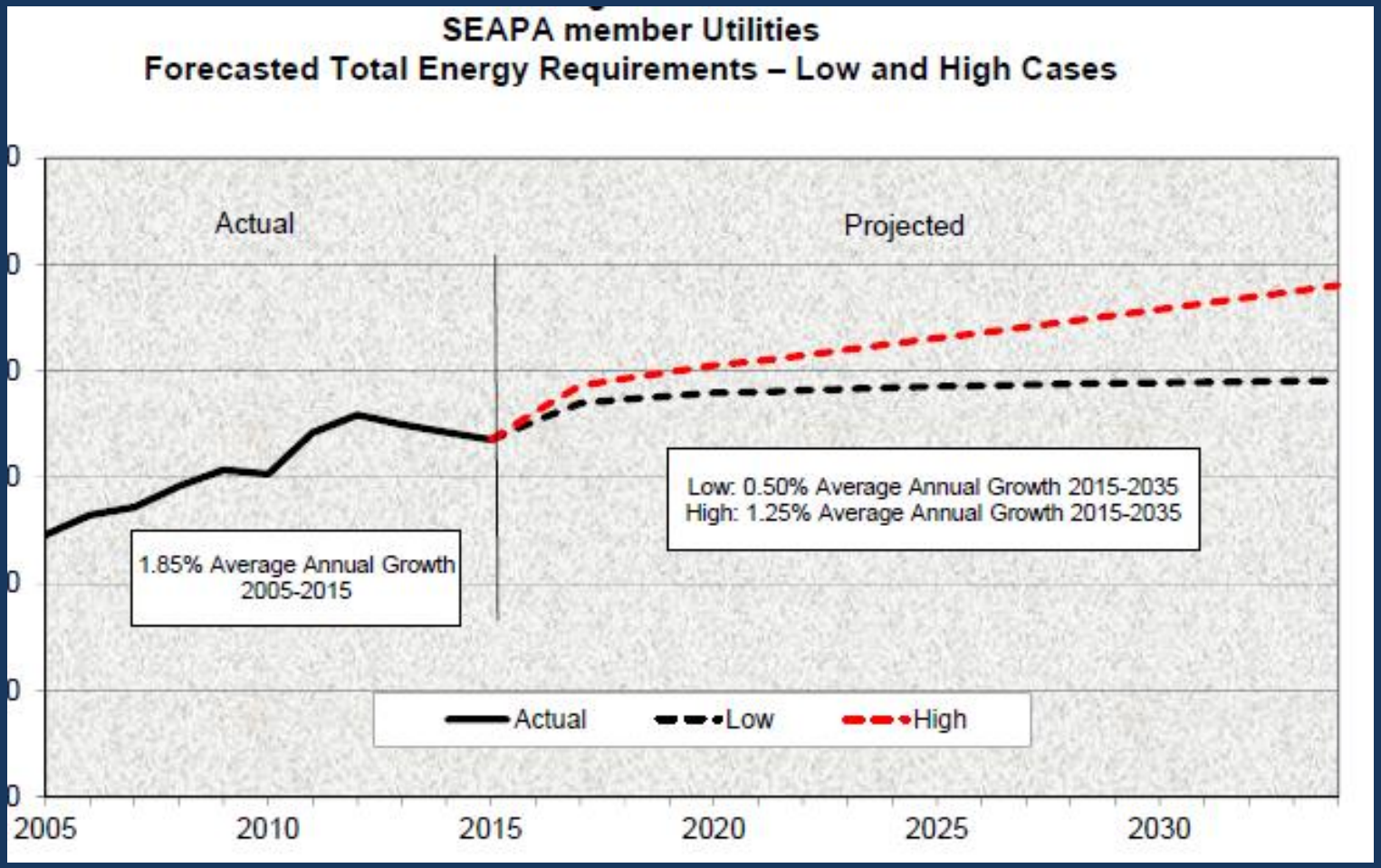


Note: Generation is net of SEAPA Transmission losses, Load is total requirements of Municipalities

SEAPA Board of Director's Meeting-Load Forecast

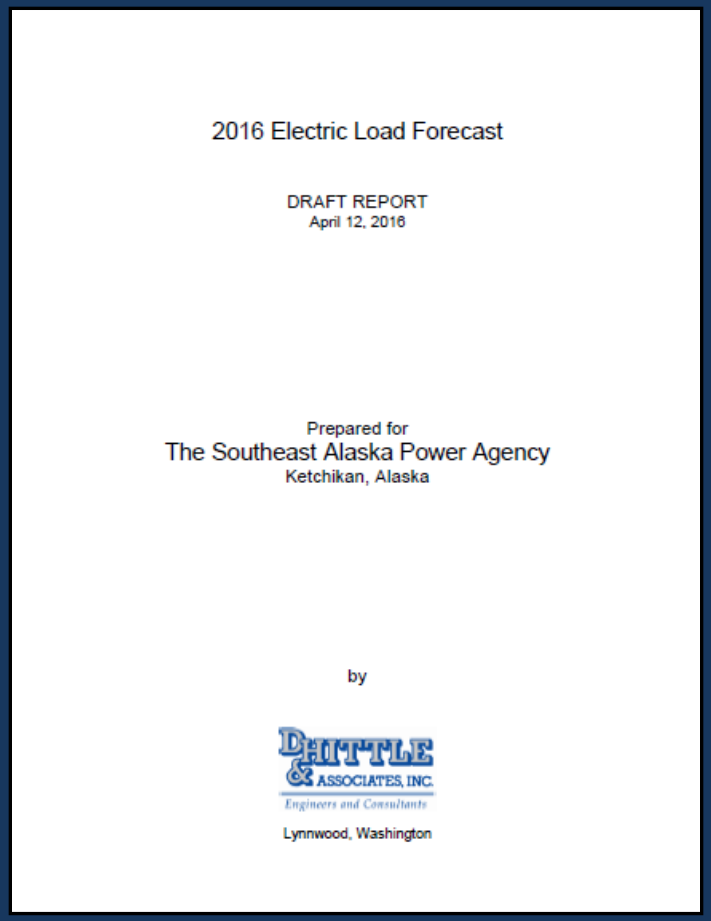


SEAPA Board of Director's Meeting-Load Forecast



Population projections to determine # of customer accounts in each class, and historical growth of energy use per customer in each class used for load growth cases, low case 0% population growth, high case .4% population growth (average)

SEAPA Board of Director's Meeting-Load Forecast



2016 Electric Load Forecast

DRAFT REPORT
April 12, 2016

Prepared for
The Southeast Alaska Power Agency
Ketchikan, Alaska

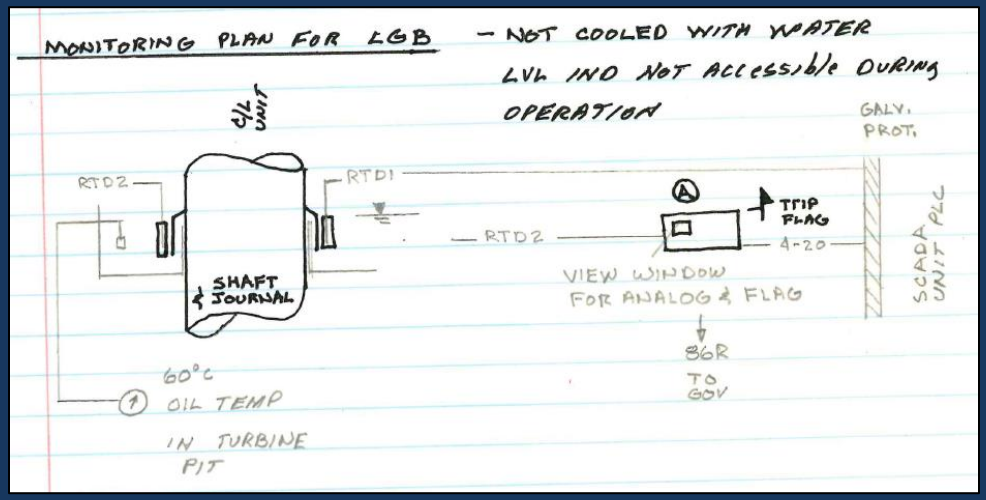
by

DITTLE & ASSOCIATES, INC.
Engineers and Consultants
Lynnwood, Washington

PMP&L
WML&P
KPU-Electric

Next Steps- Minor corrections, then have the municipalities review the assumptions and data analysis methods made for each municipality

SEAPA Board of Director's Meeting-Alarm Control Protection

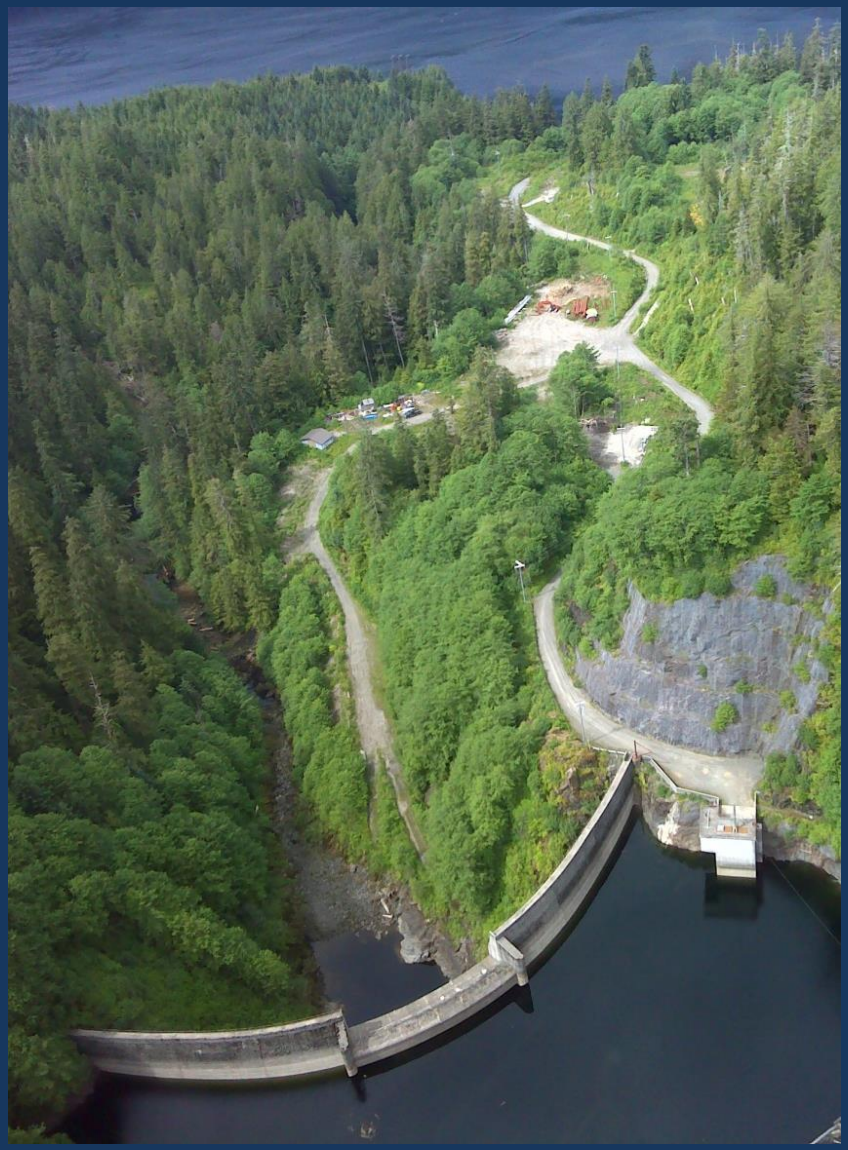


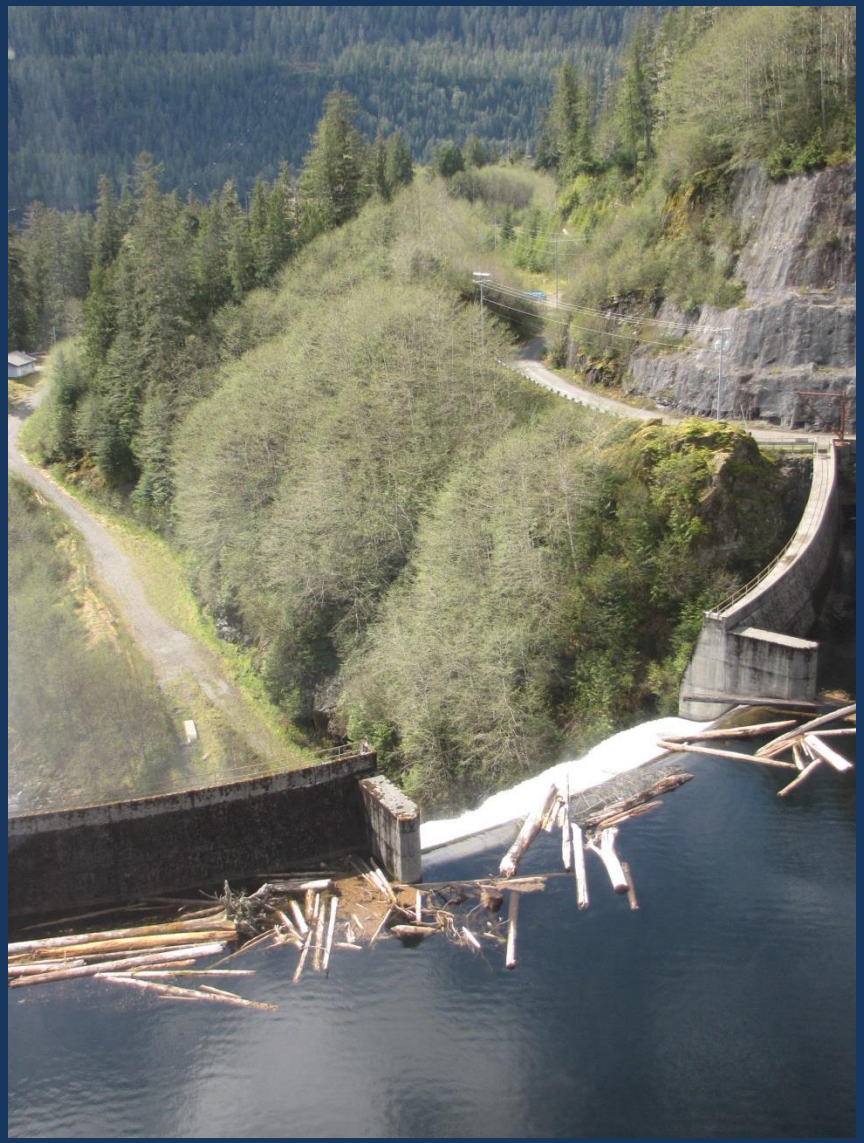
Significant Wiring and labor accomplishments November to April

TYL- Unit protection wiring, cabinet work, conduit, wiring terminations, relaying changes completed, CW completed except for final control loop tuning

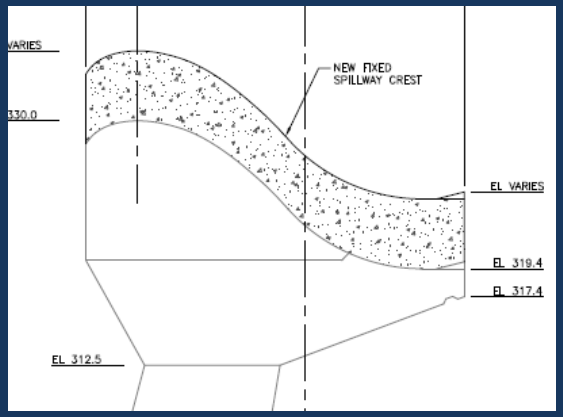
SWL-Separation of 86G & 86R, replacement of RTD wiring (multiple shield grounds corrupting signals), RTD replacement and isolation and cabinet wiring completed

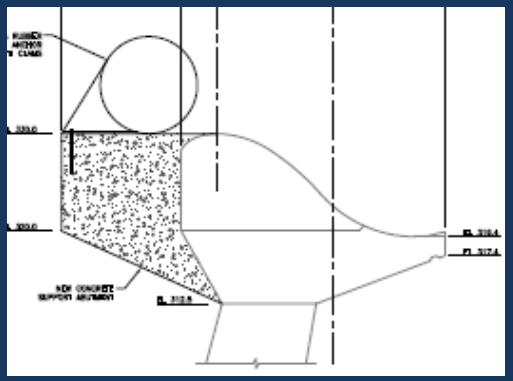
SEAPA Board of Director's Meeting-SWL Raise

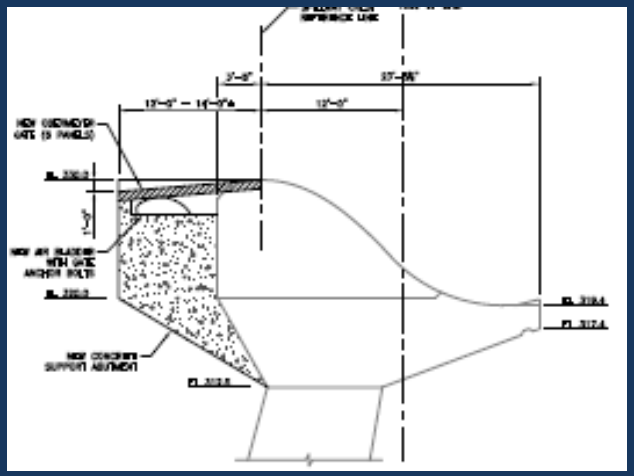


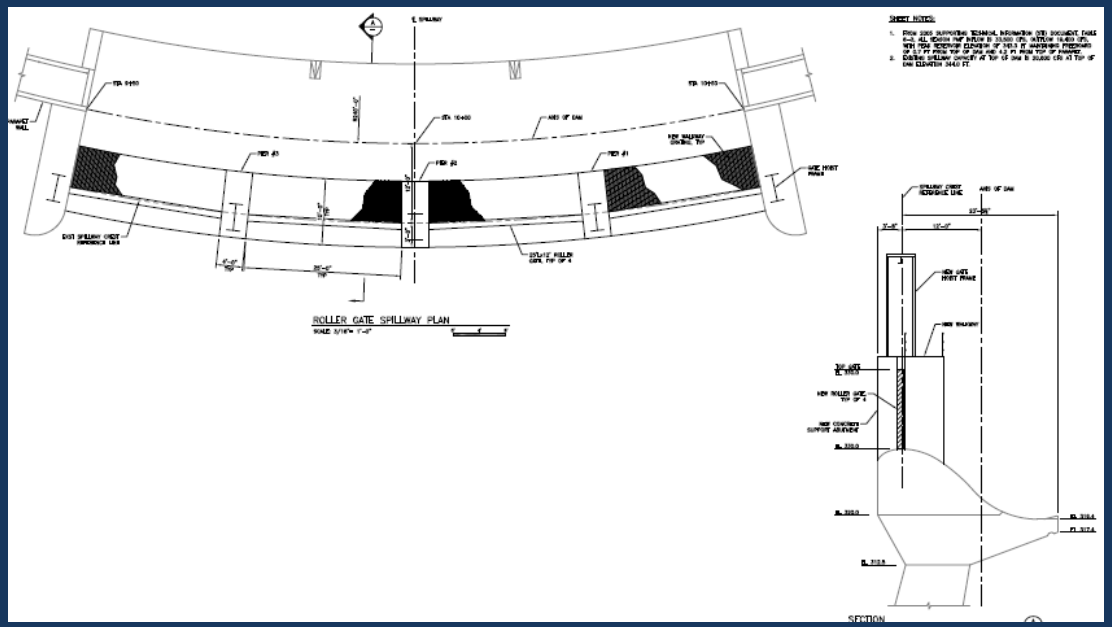


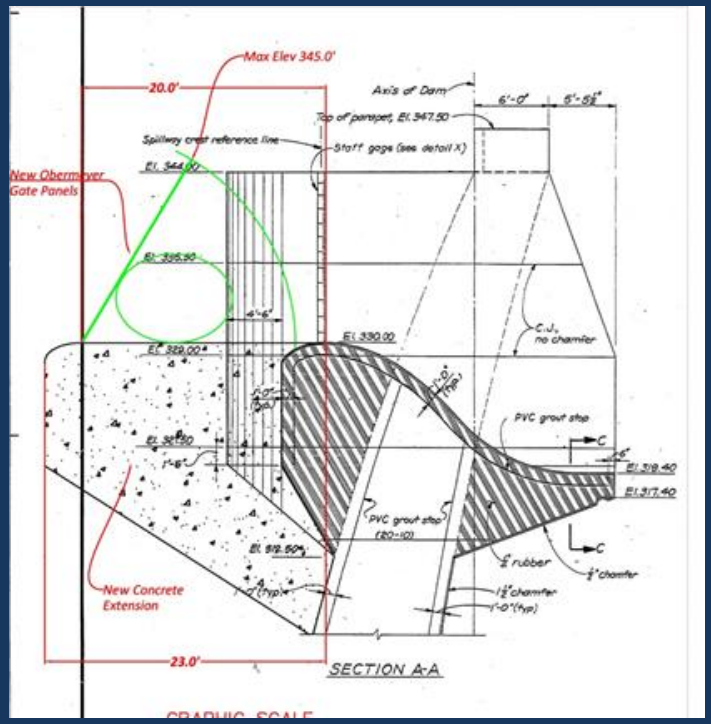
SEAPA Board of Director's Meeting-SWL Raise-How we got here



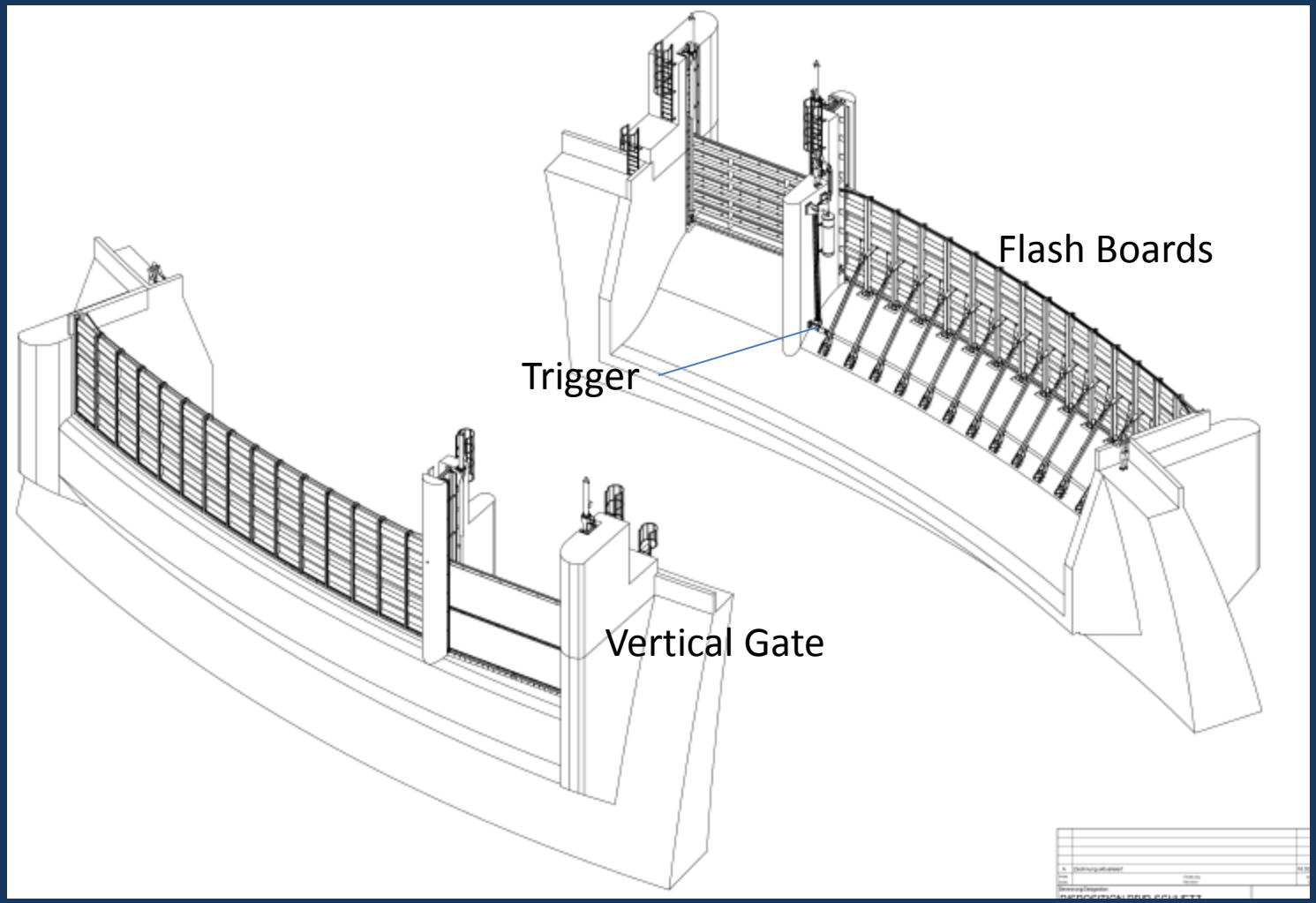








SEAPA Board of Director's Meeting-SWL Raise-Kunz



SEAPA Board of Director's Meeting-SWL Raise-BOC & FERC

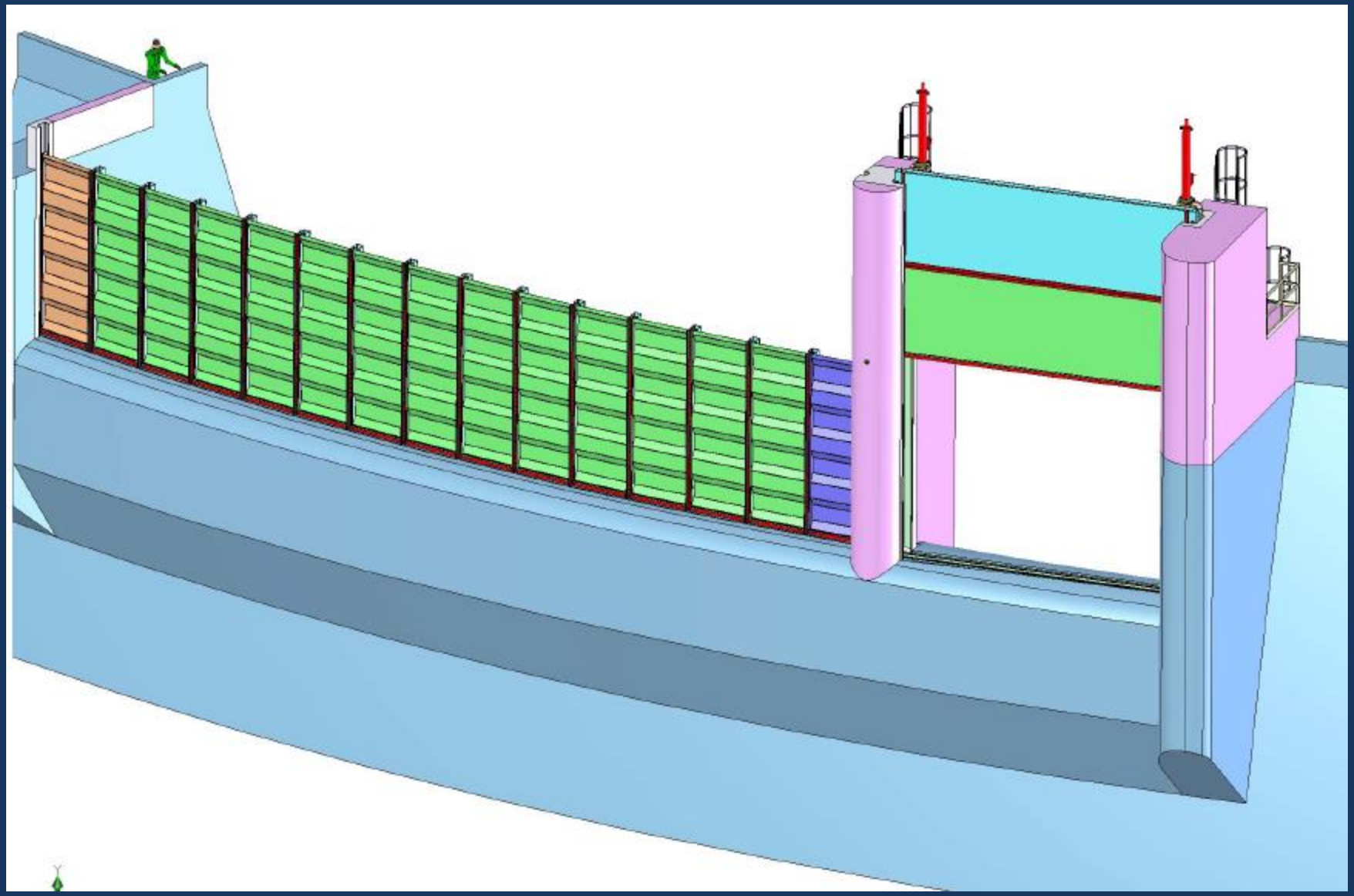
Design Review Required as part of the FERC Approval Process- must be complete before construction is to begin (Mobilization is allowed)

SEAPA submitted the Flashboard, vertical gate and hydraulics drawings and the Internal design review of those components by Glenn Brewer as well as the Kunz design documents. We submitted the Construction contract specifications and the construction drawings, and we submitted the civil engineering design document report. All of this is to be reviewed in 60 days.

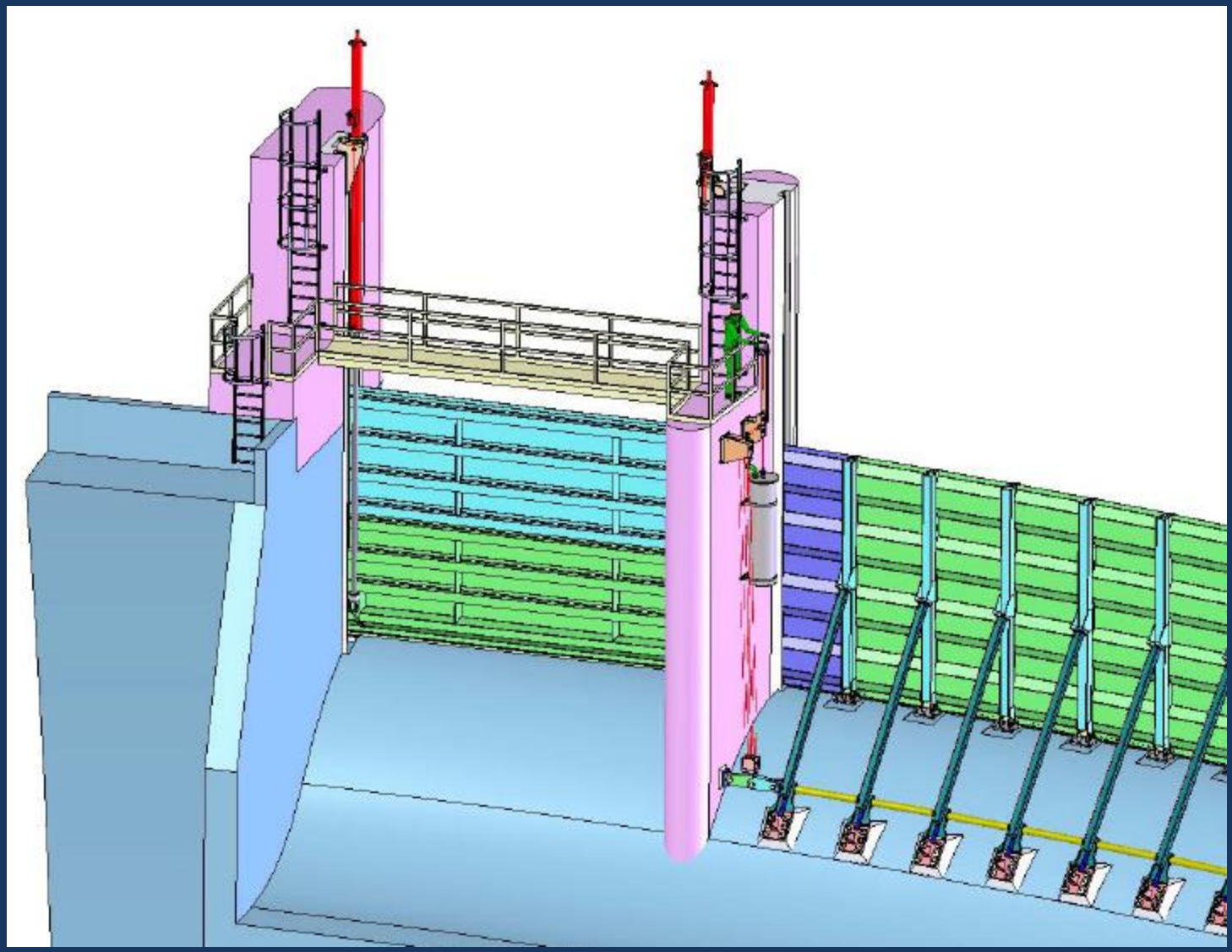
The BOC had the following comments which we also submitted to FERC

- It is not clear whether the vertical gate side seals are provided with heaters to avoid icing. This needs to be provided.
- The entire surface foundation area for the middle pier should be prepared by chipping 2 inches of the concrete to fresh concrete. The outside outline should be saw cut to 2 inch depth that avoids cutting the reinforcing steel. The drawings show only removal of the area for the sill plates.
- A risk analysis of the PMF routing and/or trip elevation needs to be performed per BOC Meeting 3 comments to document that maximum PMF reservoir elevation under a range of reasonable trip assumptions does not result in a reservoir elevation exceeding 347.5 feet.

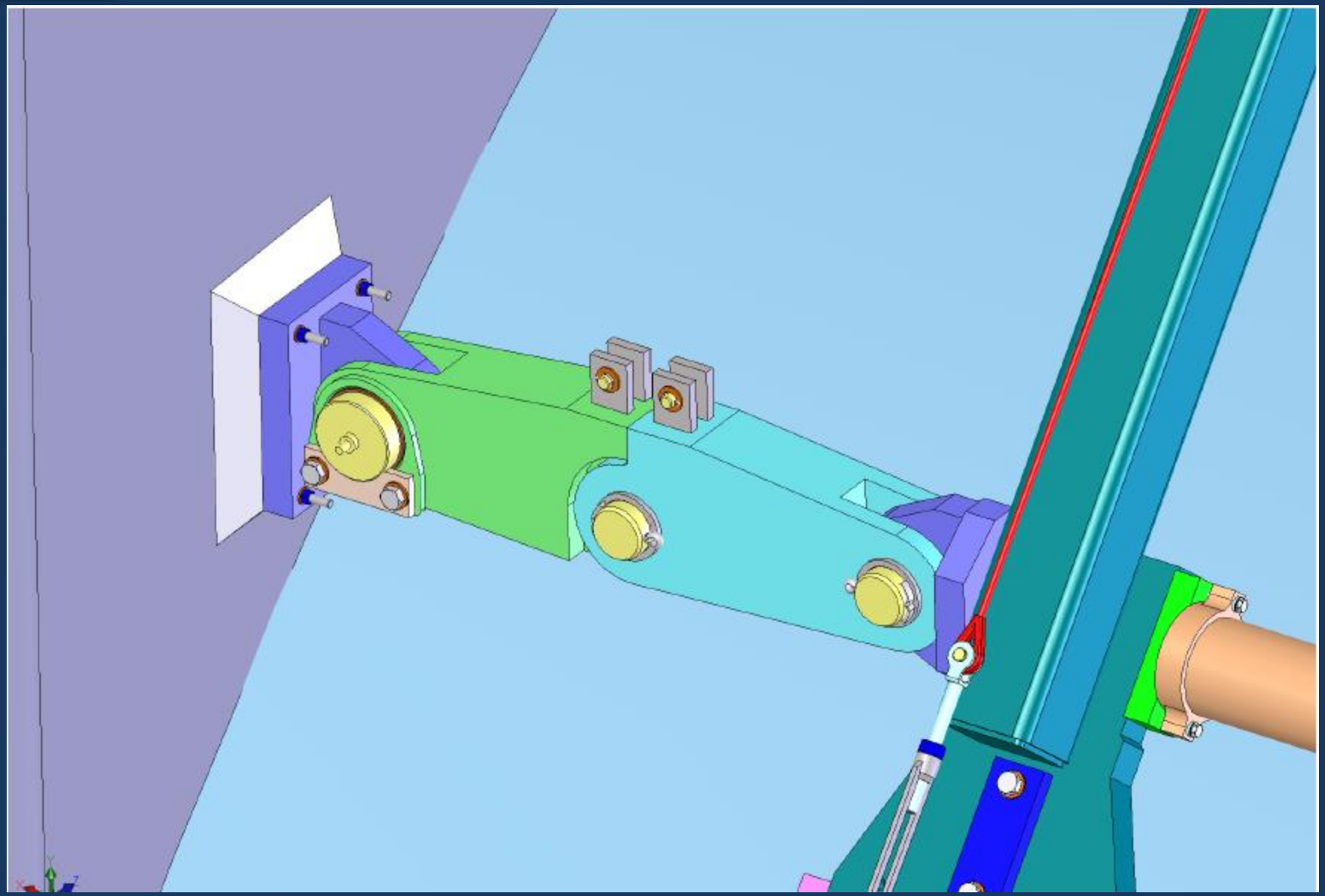
SEAPA Board of Director's Meeting-SWL Raise-Kunz



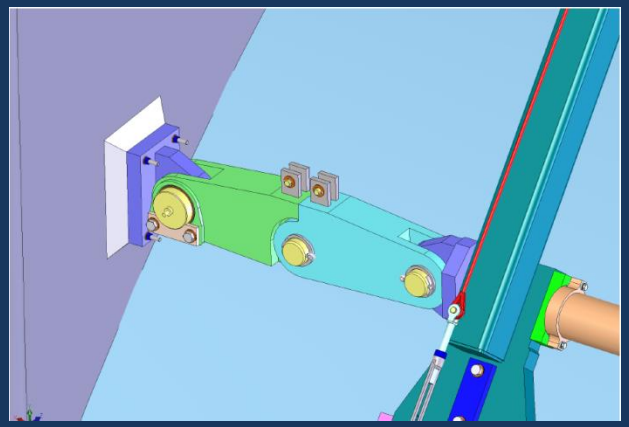
SEAPA Board of Director's Meeting-SWL Raise-Kunz

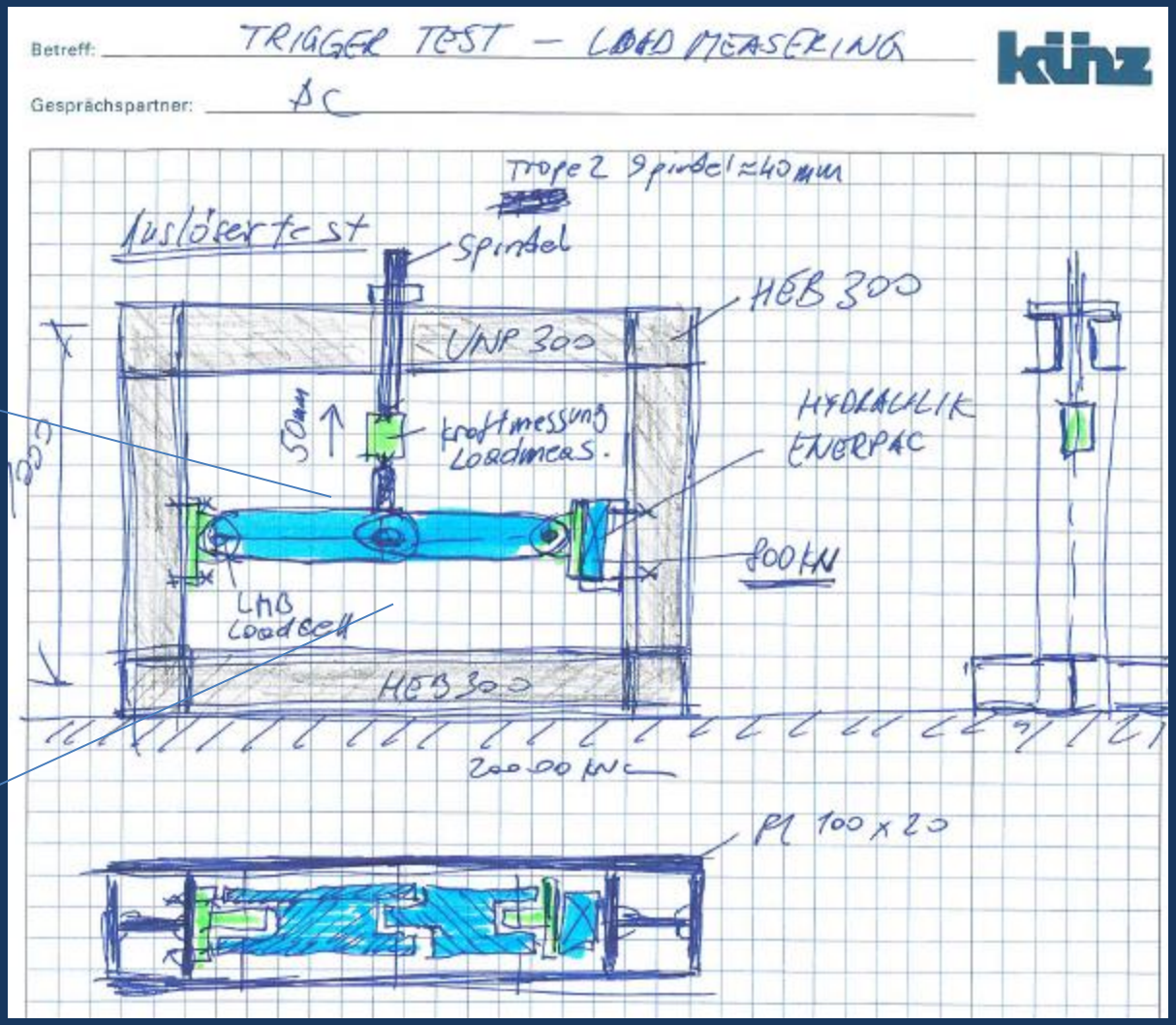


SEAPA Board of Director's Meeting-SWL Raise-Kunz

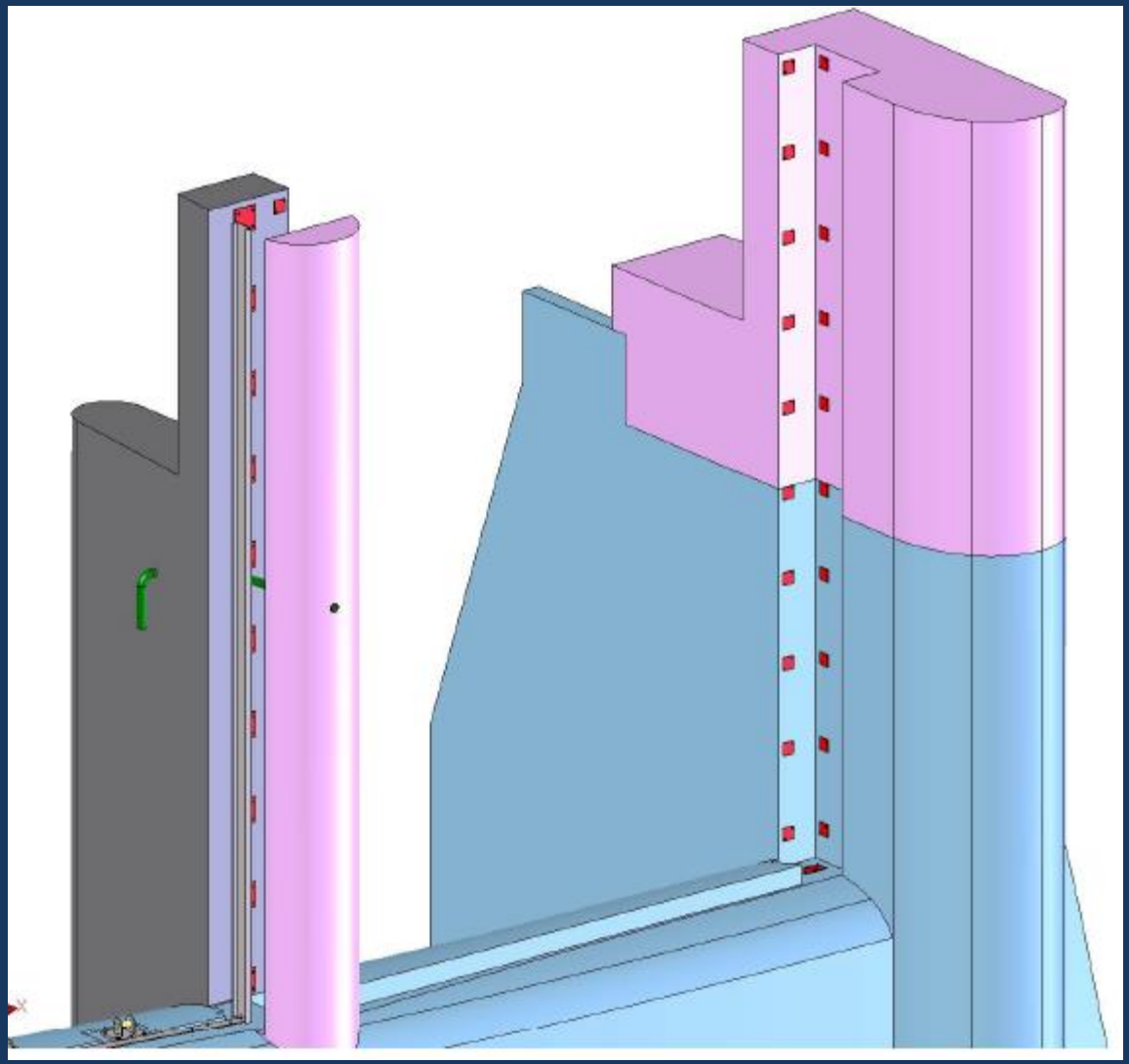


SEAPA Board of Director's Meeting-SWL Raise-Kunz

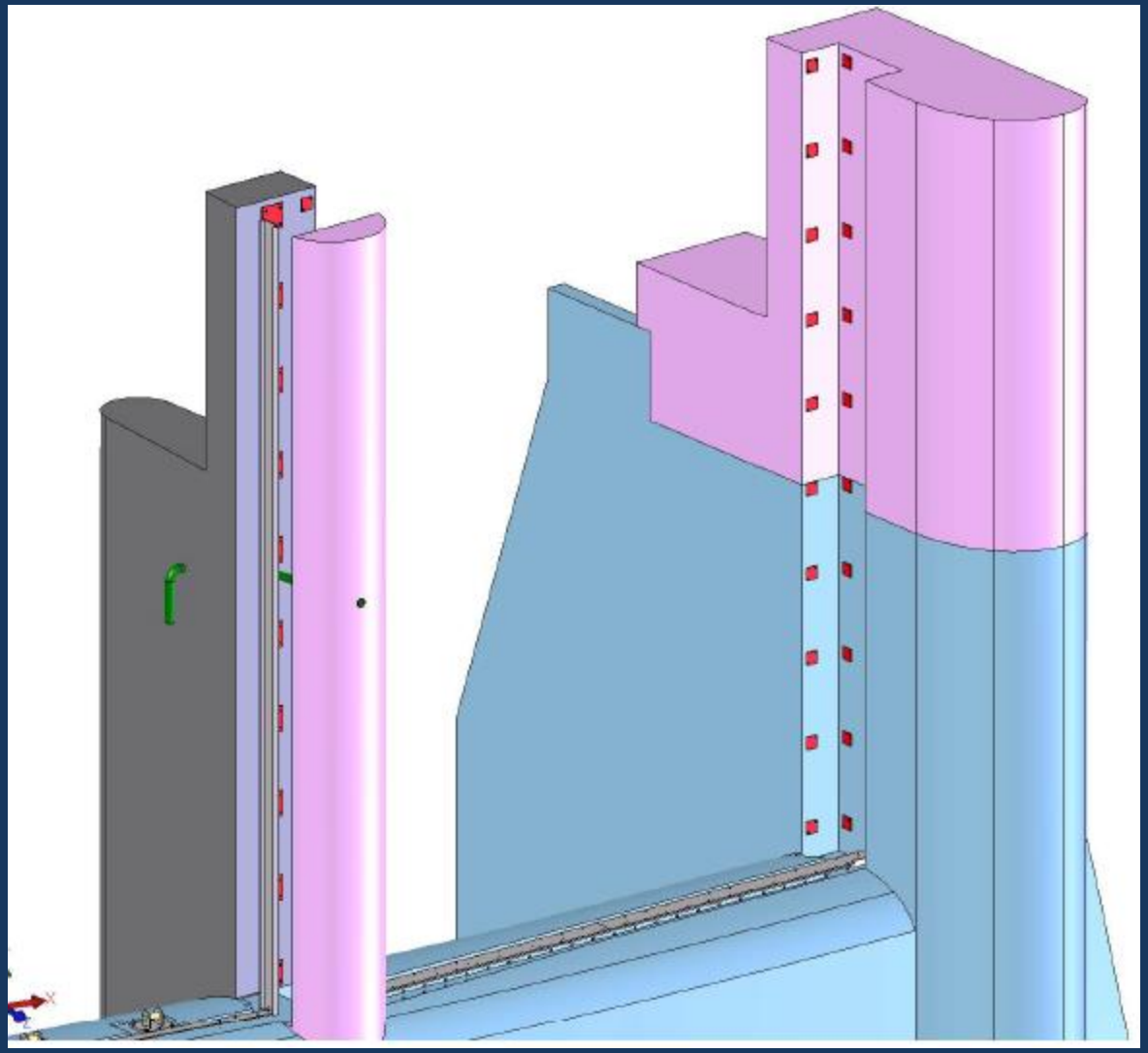




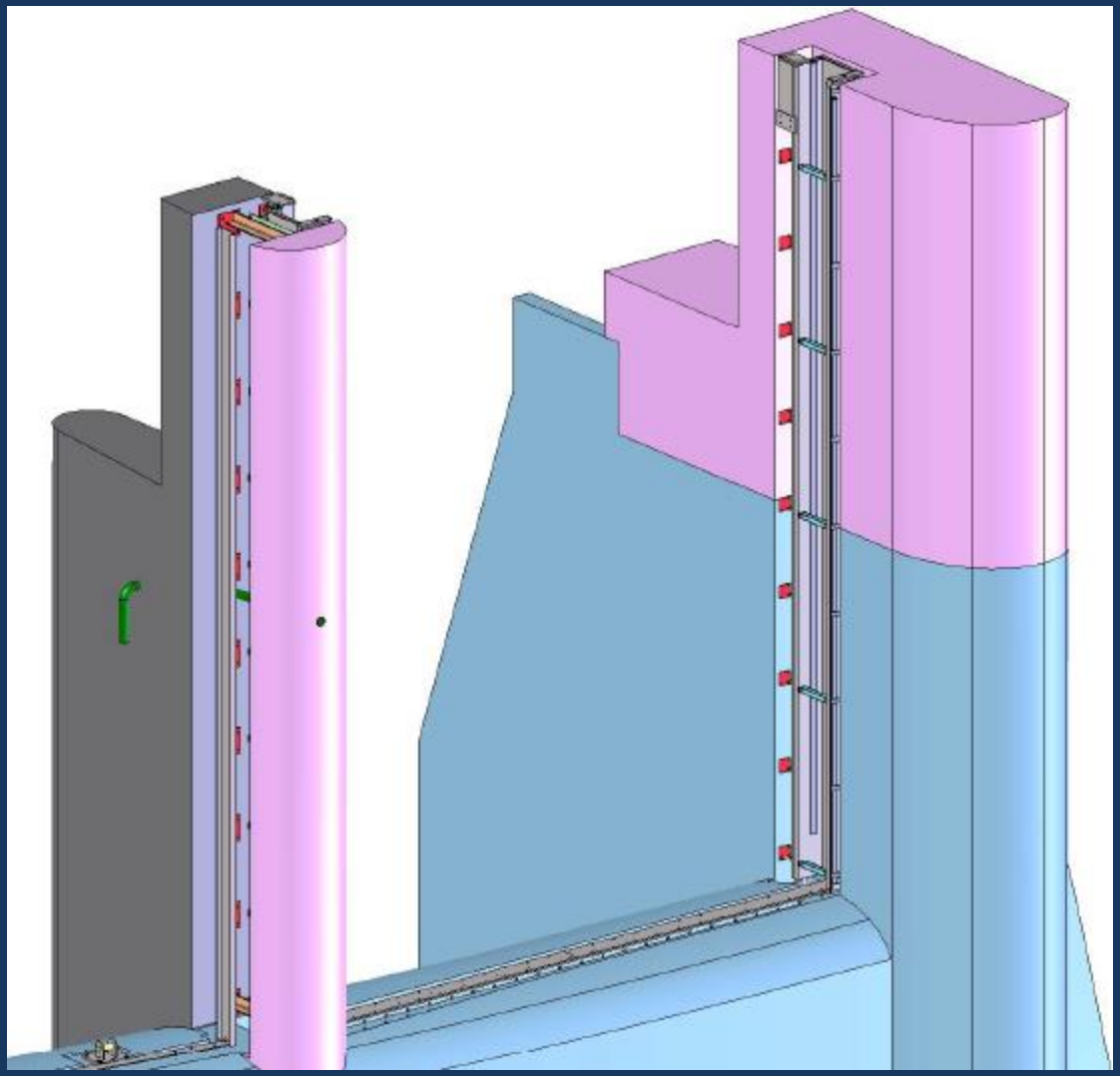
SEAPA Board of Director's Meeting-SWL Raise-Kunz



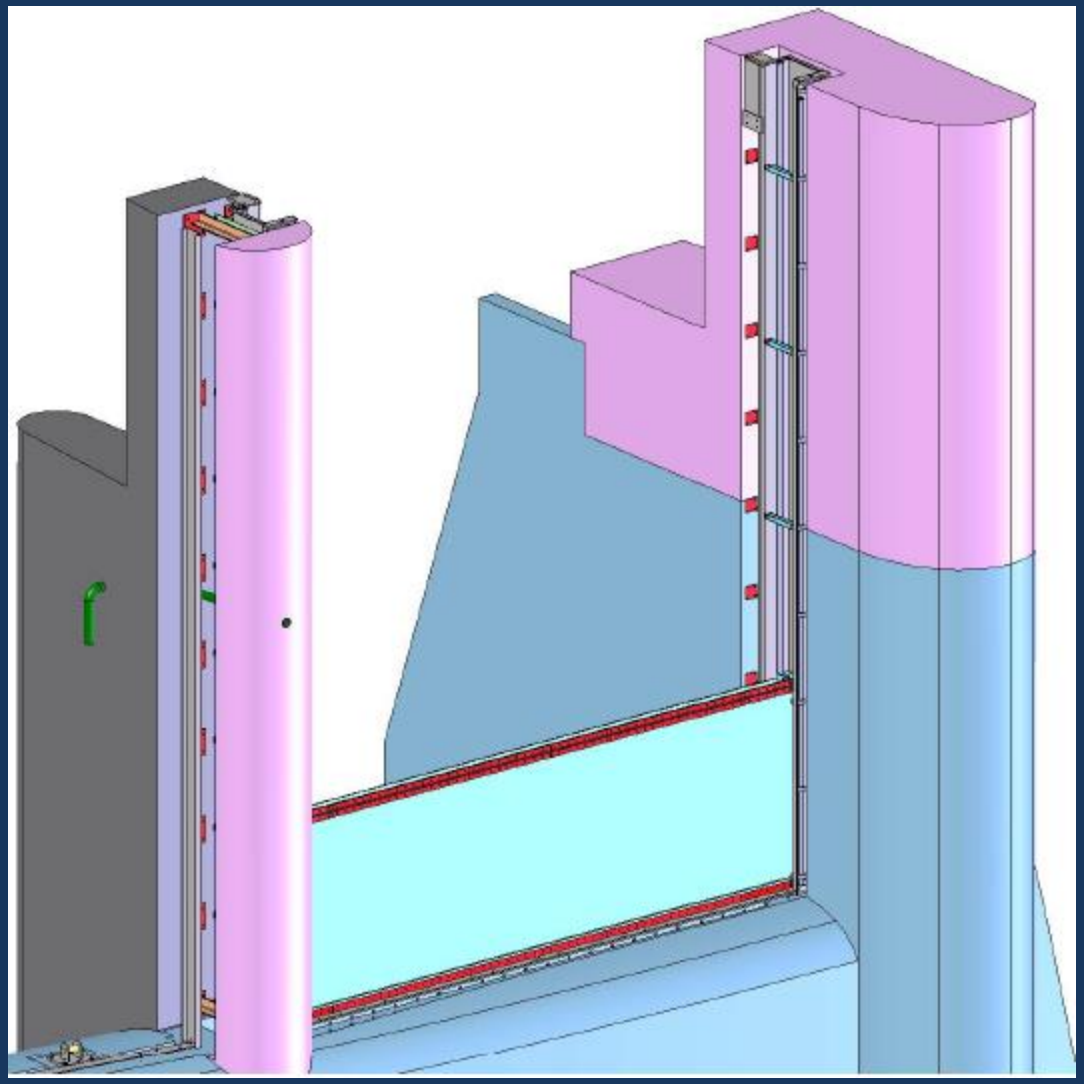
SEAPA Board of Director's Meeting-SWL Raise-Kunz



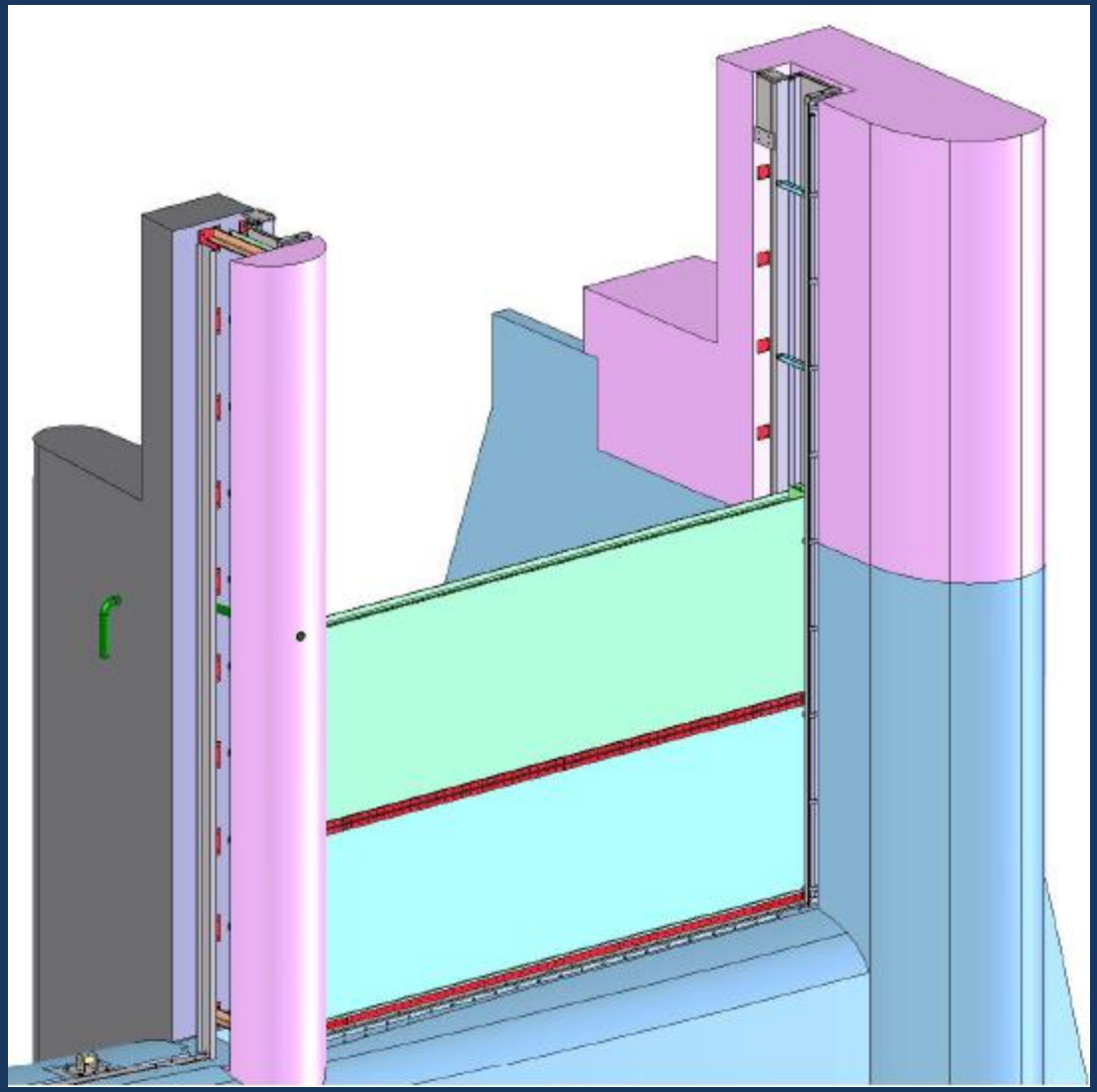
SEAPA Board of Director's Meeting-SWL Raise-Kunz



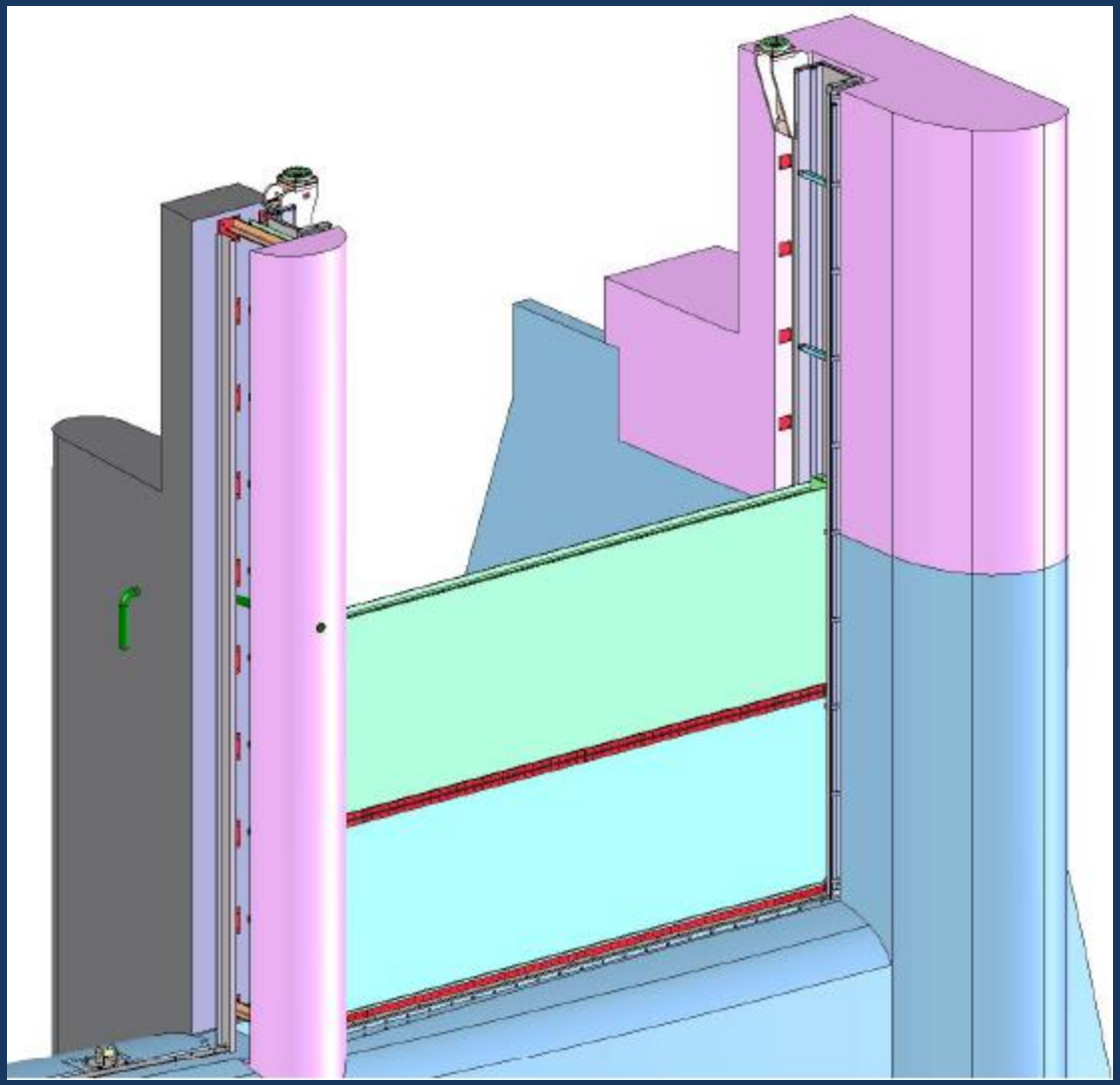
SEAPA Board of Director's Meeting-SWL Raise-Kunz



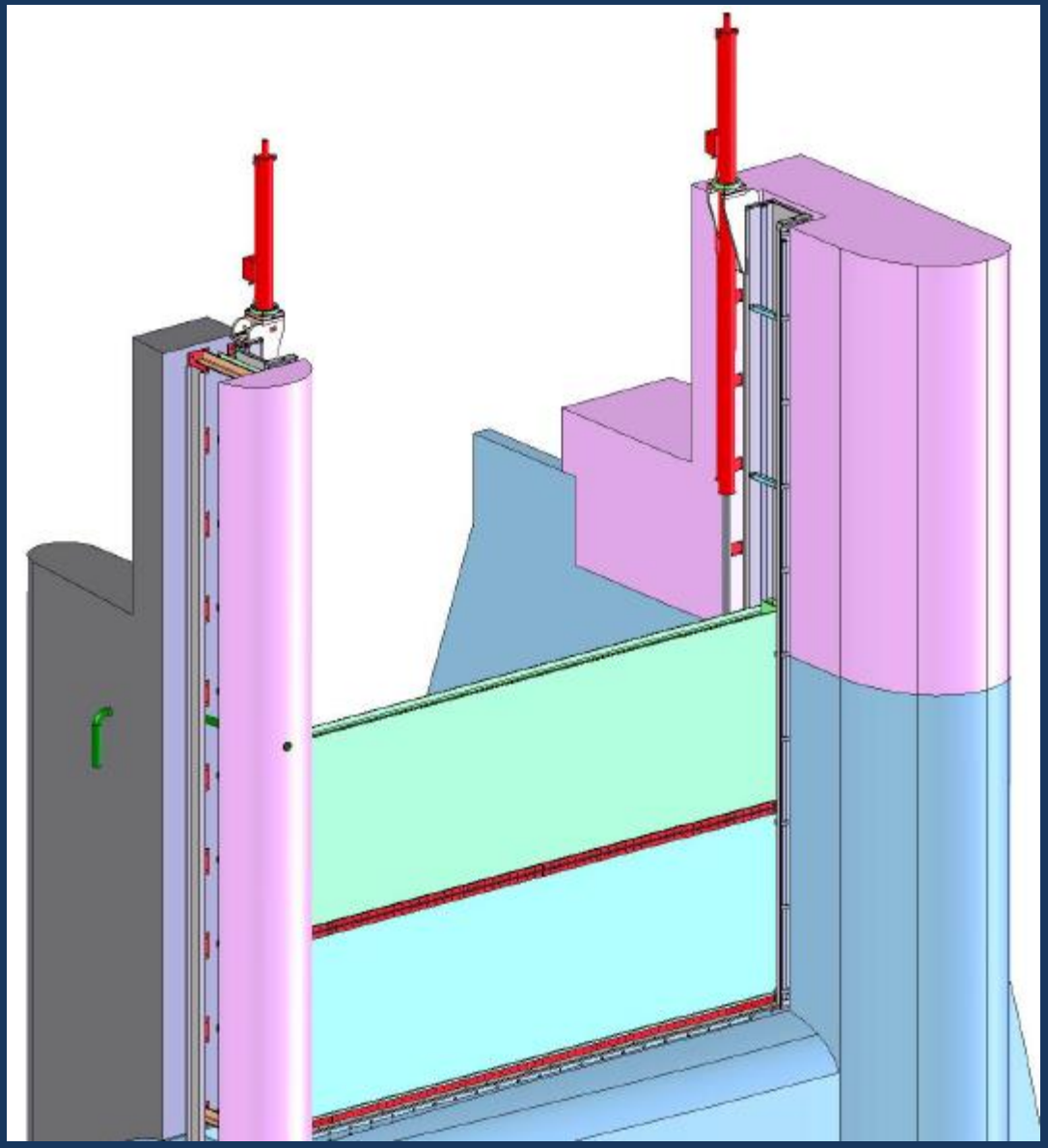
SEAPA Board of Director's Meeting-SWL Raise-Kunz



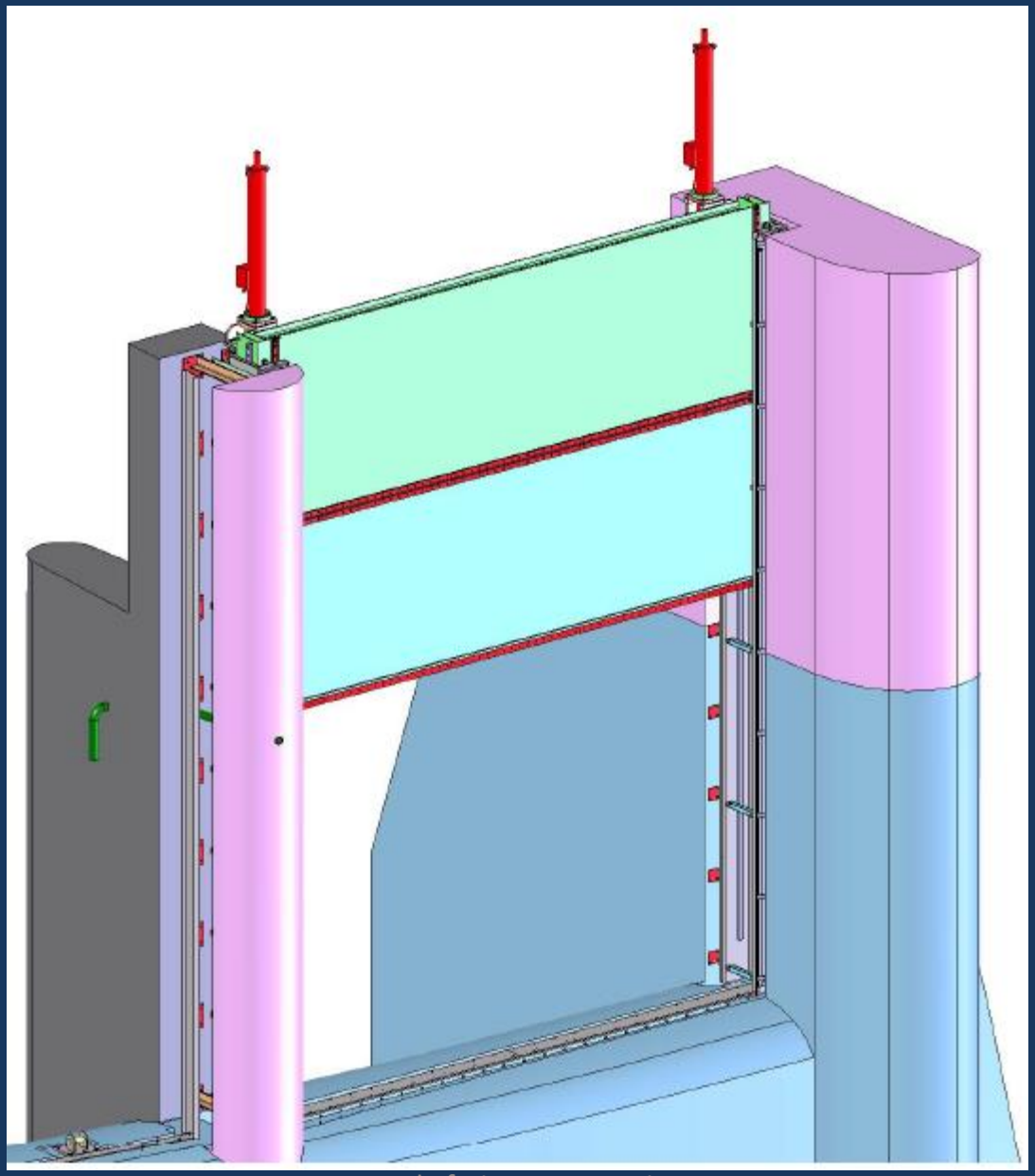
SEAPA Board of Director's Meeting-SWL Raise-Kunz



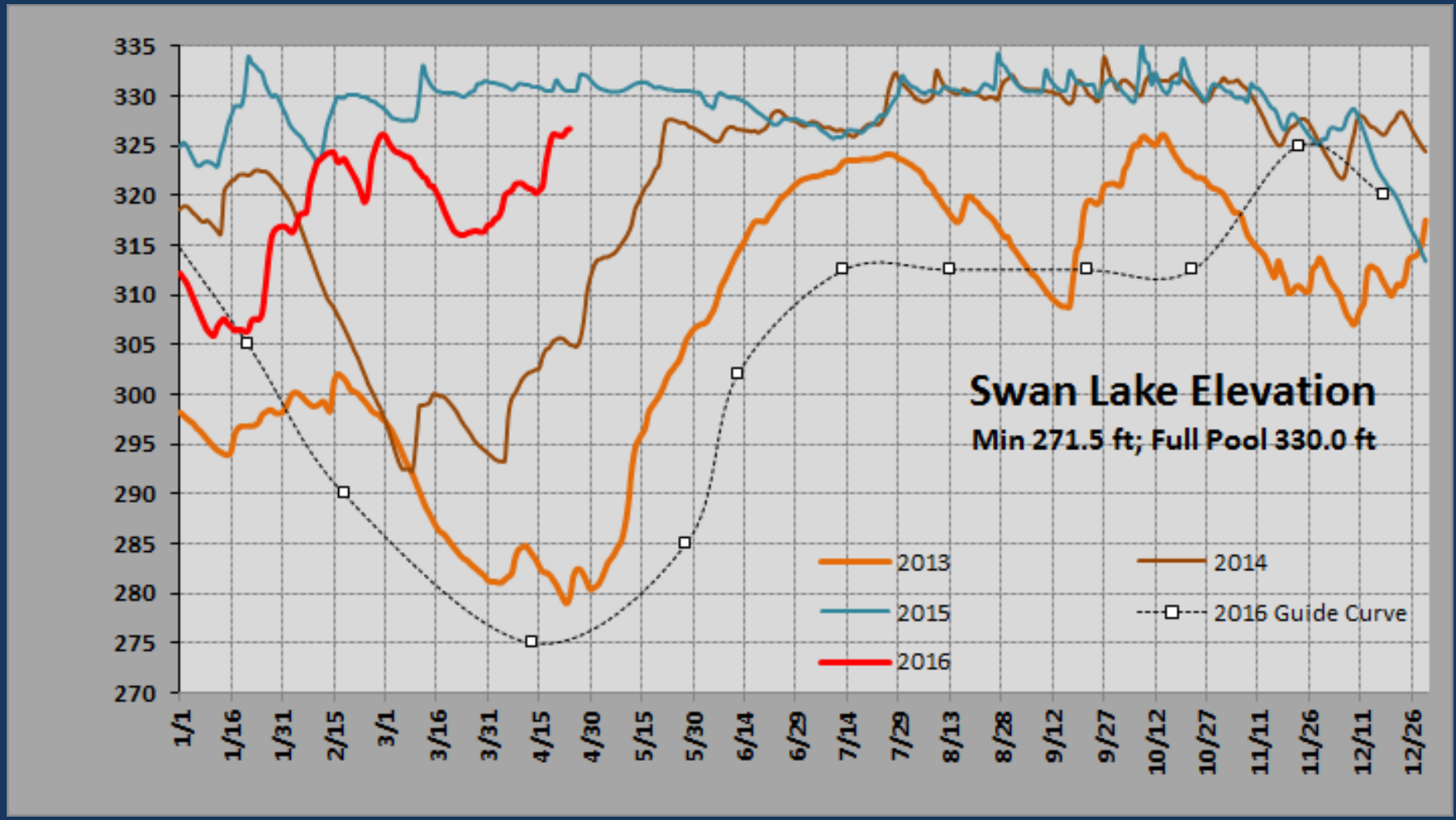
SEAPA Board of Director's Meeting-SWL Raise-Kunz



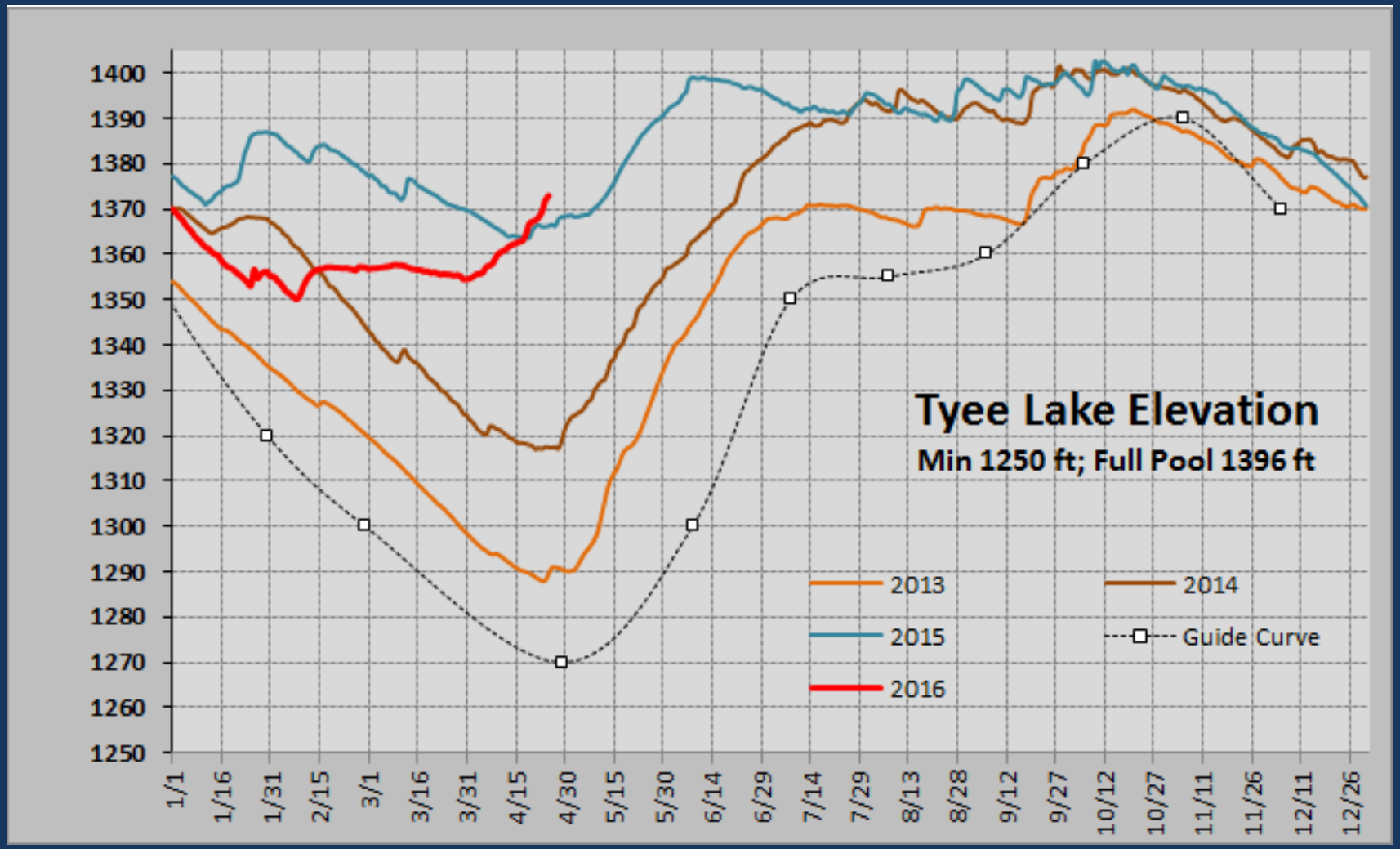
SEAPA Board of Director's Meeting-SWL Raise-Kunz



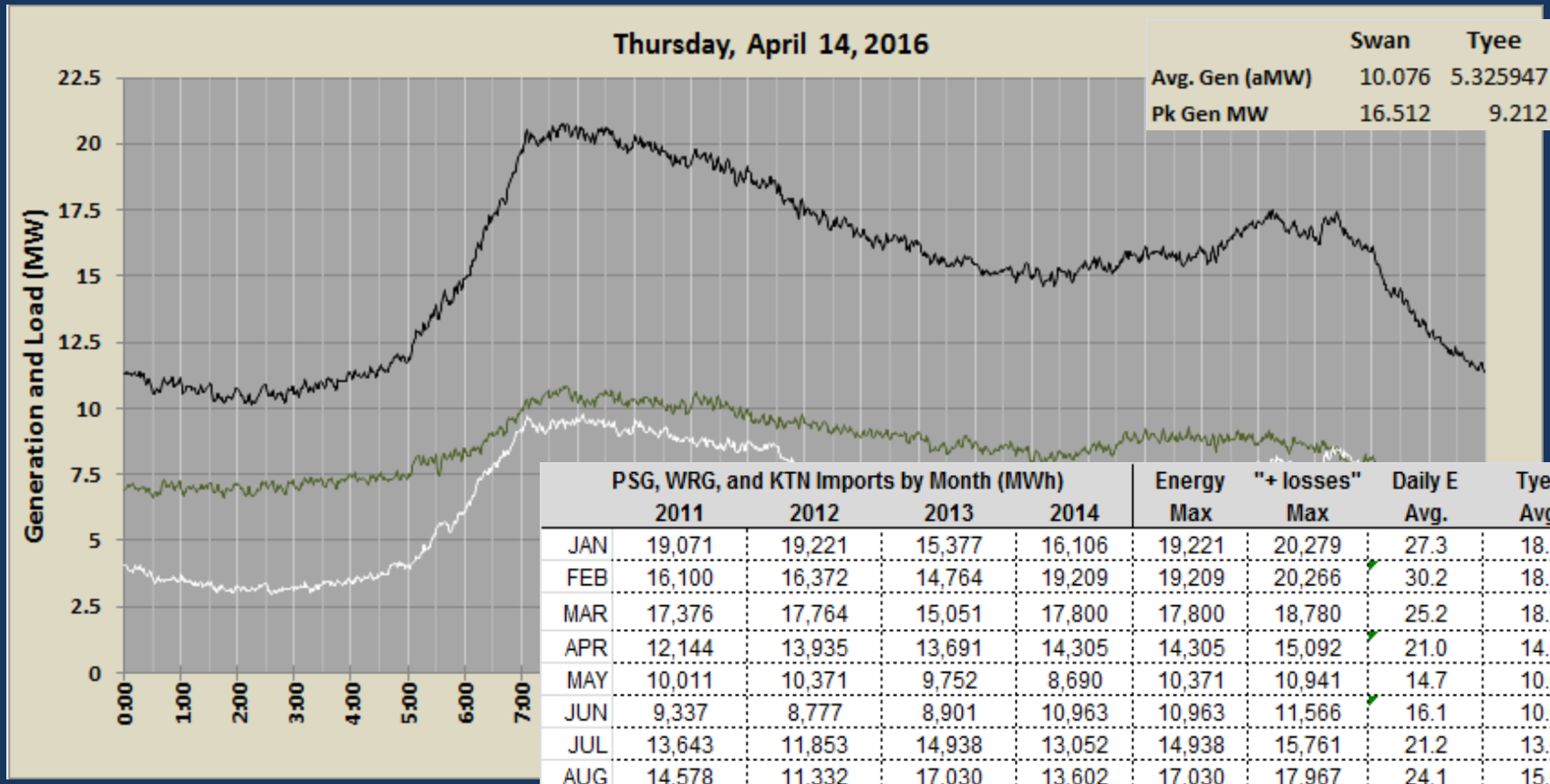
SEAPA Board of Director's Meeting-Water Management



SEAPA Board of Director's Meeting-Water Management



SEAPA Board of Director's Meeting-Water Management



	Swan	Tyee	STC
Avg. Gen (aMW)	10.076	5.325947	15.402
Pk Gen MW	16.512	9.212	20.761

PSG, WRG, and KTN Imports by Month (MWh)	2011	2012	2013	2014	Energy Max	"+ losses" Max	Daily E Avg.	Tyee Avg.	Swan Avg.
JAN	19,071	19,221	15,377	16,106	19,221	20,279	27.3	18.5	8.8
FEB	16,100	16,372	14,764	19,209	19,209	20,266	30.2	18.5	11.7
MAR	17,376	17,764	15,051	17,800	17,800	18,780	25.2	18.0	7.2
APR	12,144	13,935	13,691	14,305	14,305	15,092	21.0	14.0	7.0
MAY	10,011	10,371	9,752	8,690	10,371	10,941	14.7	10.0	4.7
JUN	9,337	8,777	8,901	10,963	10,963	11,566	16.1	10.0	6.1
JUL	13,643	11,853	14,938	13,052	14,938	15,761	21.2	13.0	8.2
AUG	14,578	11,332	17,030	13,602	17,030	17,967	24.1	15.0	9.1
SEP	9,965	9,799	13,591	11,324	13,591	14,339	19.9	13.0	6.9
OCT	11,832	15,132	13,460	10,800	15,132	15,965	21.5	13.0	8.5
NOV	16,643	18,883	18,219	14,284	18,883	19,923	27.7	15.0	12.7
DEC	17,607	19,751	19,446	17,898	19,751	20,838	28.0	15.0	13.0
Total	168,306	173,192	174,221	168,033	191,194	201,717			
SEAPA Generation		183,279	184,207	178,759					
Losses		5.5%	5.4%	6.0%					
Losses include step-up transformer, transmission, and step-down transformer									

April- Ops Plan Expected case from December 2015 Analysis-21 MW 15092 MWh/24hs/30days= 20.96 aMW