



Latrobe Valley Regional Groundwater and Land Level Monitoring Report

Annual Report July 2020 to June 2021

Regional Monitoring Committee

20 December 2021

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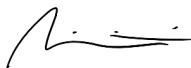

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Executive summary

AGL Loy Yang and EnergyAustralia Yallourn operate open cut brown coal mines in the Latrobe Valley to supply coal to their respective power generation stations. ENGIE owns the Hazelwood mine that supplied coal to the Hazelwood power station until its closure in March 2017 – the Hazelwood mine is currently undergoing a rehabilitation and closure process. GHD has been engaged by each of the aforementioned mine operators to complete the 2020/21 Annual Report, providing details of the groundwater and land surface monitoring activities for the period July 2020 to June 2021. Each operator has a Groundwater Extraction Licence (Licence) for management of their respective depressurisation systems.

This annual report is prepared in accordance with the requirements as outlined in clauses 22 and 23 of Attachment A to the Extraction Licences. Annual and monthly extraction volumes by aquifer system, at each mine, were below licenced allocations (Table 1). The site and aquifer systems are:

- Hazelwood Mine - M1 and M2 Aquifers
- Loy Yang Mine - Morwell Formation and Traralgon Formation Aquifers
- Yallourn Mine - Haunted Hill and Morwell Formation Aquifers

Table 1 Groundwater Extraction Summary

July 2020 to June 2021	Extraction Volume (ML)	Licensed Volume (ML)	Unused Licence (ML)	% Licensed Volume Unused
Hazelwood	11,810.5	20,480	8,669.5	42.3%
Loy Yang	11,844.3	19,303	7,458.7	38.6%
Yallourn	1,274.2	2,372.5	1,098.3	46.3%
Total	24,929.1	42,155.5	17,226.4	40.9%

Total groundwater extraction continues to be less than currently licenced with 40.9% of the allocation unused due to improved efficiency of mine depressurisations systems, a better understanding of aquifer interactions at the mines and the adoption of a risk-based approach in determining drawdown requirements.

Monitoring Activities

Clause 23a of Attachment A to the Licences requires the annual report to include details of the monitoring activities undertaken in the review period. The annual groundwater extractions are summarised above. The groundwater level and land level monitoring activities include:

- Summer and winter monitoring of the regional observation bore network. This comprised of 37 bores monitoring the Morwell Formation Aquifer System (MFAS) and 56 bores monitoring the Morwell 2/Traralgon Formation Aquifer System (M2/TFAS). Additionally, two bores monitor groundwater levels in the underlying basement rock and one bore monitors the Gippsland Limestone. Eight of eleven bores installed in the Shallow Aquifer System (SAS) were monitored in the review period. Five MFAS and thirteen M2/TFAS bores were unable to be monitored due to access and bore condition issues.
- No land level monitoring was required in the review period.

Monitoring Assessment

Clause 23c of Attachment A to the groundwater extraction licences requires the annual report to detail any issues arising from the monitoring results and significant variations to predicted trends. The 2020/21 monitoring results indicates:

- Groundwater levels for the M2/TFAS were generally in line with the previous 2020 predictions and continue to show steady declines in groundwater levels across the Latrobe Valley. Exceptions to this include bores 100093, where pressures have stabilised, and both 10942v02 and 110034 which have shown a decline trend since 2019 after a period of increasing pressures from 2017 to 2020. These fluctuating trends are not considered significant and likely to be attributed to seasonal variability and influence of local extractors.

- The MFAS trends are generally more variable particularly at bores distant to the mines whereas the rate of decline for the M2/TFAS continues to typically be greater and more uniform. These observations are consistent with trends recorded over a long period in the Latrobe Valley. An exception to this is an increasing trend observed in the MFAS uppermost piezometer (v10) at 52809. In contrast, the deeper piezometer (v04) shows an increase in the rate of decline since 2019 associated with the depressurisation of the M1B Aquifer with the easterly mine expansion at Loy Yang Mine.
- MFAS monitoring bores near Hazelwood West Field (23263) and Yallourn Maryvale Field (13190 v05) developments, where pump bores have been commissioned, locally showed an increase in the rate of depressurisation. At bore 23263 aquifer pressures have since stabilised. The variations from the predicted MFAS trends are not considered significant as can be attributed to local influences due to changes in aquifer depressurisation pumping or mining.
- The Gippsland Limestone bore shows stable water trend consistent with the low permeability of this formation and poor connection to the underlying M2/TFAS.
- Impacts to the overlying SAS are typically limited by the low permeability of the overlying coals and clays. Water level trends range from minimal rates of decline at 52883 to increasing trends previously observed at 80493. The increase in the shallow piezometer at 80493 monitoring the Haunted Hills Formation is more pronounced compared to the underlying piezometer monitoring the Yallourn Formation. This suggest the surficial aquifer is influenced by long term seasonal trends such as the millennium drought whereas the low permeability of the deeper SAS formation limits this climatic influence.
- MFAS monitoring bores near Hazelwood West Field (23263) and Yallourn Maryvale Field (13190 v05) developments, where pump bores have been commissioned, locally showed an increase in the rate of depressurisation. At bore 23263 aquifer pressures have since stabilised and are very close to the 2020 estimates whereas at 13190 v05 pressures are several meters below the 2020 prediction which was based on historical trends and did not take into account unforeseen pump bore start-ups. Future predictions will be reforecast based on the modelling results using the expanded pumping schedules.
- Impacts to the overlying SAS are typically limited by the low permeability of the overlying coals and clays. Water level trends range from minimal rates of decline at 52883 to increasing trends at 80493. The increase in the shallow piezometer at 80493 monitoring the Haunted Hills Formation is more pronounced compared to the underlying piezometer monitoring the Yallourn Formation. This suggest that the surficial aquifer is influenced by long term seasonal trends such as the millennium drought whereas the low permeability of the deeper SAS formation is more remote from this climatic influence.

Monitoring Bore Summary

M2/TFAS groundwater monitoring bore issues:

- There are 10 key bores monitoring the M2/TFAS. Four require rehabilitation:
 - 210051 due the standing water level being greater than 200 m depth.
 - 190054 anomalous RWL trends following headworks damage from roadworks.
 - 920007 has been damaged by vandalism.
 - Anomalous water level trend has been confirmed at 440341 and required assessment.
- The six key bores monitored in the review period show consistent long term trends and in conjunction with the full network monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation.
- In addition to the above key M2/TFAS monitoring bores not monitored, eleven other M2/TFAS bores were unable to be monitored due to: access restrictions at three bores; and bore condition issues at including GI casing due to corrosion or headworks damage at eight bores.

MFAS groundwater monitoring bore issues include:

- Of the nine MFAS key bores, eight were monitored and one is considered to be unreliable with an anomalous trend, and in conjunction with the full network monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation to this aquifer. Headworks damage at key bore 52810 requires repair, and assessment of bore condition at 440056 is required as the recent data obtained after access was re-established following highway duplication, is considered unreliable.
- In addition to the above key MFAS monitoring bore not monitored, two MFAS bores were not monitored due to landowner access restriction and two bores due to headworks damage from roadworks

- The 2020/21 bore rehabilitation program included assessment of the vibrating wire terminal boxes at MFAS bore 90344 of which v04 was successfully rehabilitated

SAS groundwater monitoring bore issues include:

- SAS key bore 80493 is located on private land and was not accessible in the review period. Similarly bore 13282 also in private land was not accessible and SAS monitoring data is being sourced instead from bore 26091 close to the eastern boundary of the Yallourn mining licence to address this data gap.
- Bore 80496 was not monitored in the review period due to headworks damage from clearing of the site and is to be surveyed to re-establish monitoring

Network Amendments

Clause 23b requires the annual report to detail amendments to the monitoring network. No formal monitoring network amendments have been adopted by the RMC in the review period. Proposed network amendments to the list of licenced bores include the deletion of 50 bores due to:

- bores never monitored by the RMC (16)
- sealed bores with piezometers installed (10) and without piezometers (8)
- previously monitored by Engie within their mining licence (1)
- bores where all or individual vibrating wire piezometers have failed (15)

Recommendations

The following work is recommended for annual reporting requirements as outlined in clause 23 of Attachment A to the groundwater extraction licences:

- Implement the bore rehabilitation program as outlined in Section 7.2 of this report with the focus on the key bores in order to maintain the extent of the observation bore network
- Amended the regional monitoring bore program to address the fact that the original list of regional monitoring bores contained in Attachment A of the groundwater extraction licences did not reflect the program as originally implemented and other modifications since adopted
- Continue to determine the status of bores with long term access issues. This information can then be considered for future bore rehabilitation priorities and monitoring network amendments.
- Continue groundwater monitoring at a six monthly frequency with summer and winter monitoring rounds, as review of the data has shown it to be appropriate for monitoring changes in aquifer pressures and for asset management to indicate potential problems in individual bore performance

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1. Introduction

AGL Loy Yang and EnergyAustralia operate open cut brown coal mines in the Latrobe Valley to supply coal to their respective power generation stations. ENGIE owns the Hazelwood mine that supplied coal to the Hazelwood power station until its closure in March 2017 – the Hazelwood mine is currently undergoing a rehabilitation and closure process. To maintain stable geotechnical conditions, it is necessary to depressurise the major aquifers that lie beneath each of these mines. Intermittent overburden dewatering may also be required to improve material handling. Under Section 51 of the Water Act (1989), each of the businesses has obtained a Groundwater Extraction Licence (Licence) for the operation and management of their respective depressurisation systems. The licences refer to regional monitoring requirements, detailed in its Attachment A. Under the terms of the regional monitoring program the businesses are required to report:

- Annually on; groundwater extractions, monitoring and bore rehabilitation activities, and
- Five yearly on; subsidence and groundwater modelling to assess the impact of mine depressurisation on the regional aquifer system and land levels

The five year groundwater and land level monitoring and groundwater modelling work program is shown in Appendix A, and also contains the relevant section of the Licence and its Attachment A that further details the reporting requirements.

As the depressurisation activities at each mine are inter-related, regional monitoring, modelling and data storage is jointly managed. GHD was engaged by each operator to complete this 2020/21 Annual Report. Prior to final issue, this report is reviewed by the Latrobe Valley Regional Monitoring Committee (RMC). Clause 20 of Attachment A states the committee shall comprise representatives from each mine, Southern Rural Water (as the delegate from the Minister responsible for the Water Act) and a representative from the Department of Jobs, Precincts and Regions (DJPR). A representative from the Department of Environment, Land, Water and Planning (DELWP) is not included in the RMC but has attended with observer status since the committee's inception.

A regional groundwater monitoring network was established by the SECV over many years up to 1992, to observe the impact of aquifer depressurisation associated with the Latrobe Valley coal mining operations. The purpose of the network is to

- Provide an indication of the groundwater levels in the major regional aquifers,
- The annual rate of change in the groundwater levels and
- The extent of aquifer depressurisation impacts

A network of regional land level survey markers was also established by the SECV to enable monitoring of ground surface levels. The purpose of this network is to provide an indication of the response of ground surface elevations to aquifer depressurisation.

The purpose of this Annual Report is to provide the details of regional groundwater and land level monitoring activities for the period July 2020 to June 2021. This report addresses the requirements outlined in clause 23 of License Attachment A. Specifically, the required monitoring program is presented in Table 2 along with the corresponding section of this report where addressed.

Table 2 *Monitoring program requirements and report sections*

Extraction Licence Attachment A Clause 23 Requirements	Report Section
a) Monitoring activities undertaken in the past year <ul style="list-style-type: none"> - Groundwater extractions - Groundwater level monitoring - Land level monitoring 	Section 3 Section 4.2 Section 5
b) Any amendment to the monitoring network	Section 4.3 and Section 7
c) Any issues arising from the monitoring results and significant variations to predicted trends	Section 4.2 and Section 9

1.1 Limitations

This **Latrobe Valley Regional Groundwater and Land Level Monitoring Report, July 2020 to June 2021** (“Report”) has been prepared by GHD for AGL Loy Yang, ENGIE and EnergyAustralia Yallourn and may be used and relied on by AGL Loy Yang, ENGIE and EnergyAustralia Yallourn for the purpose agreed between GHD and AGL Loy Yang, ENGIE and EnergyAustralia Yallourn as set out in Section 1 of this Report.

GHD otherwise disclaims responsibility to any person other than AGL Loy Yang, ENGIE and EnergyAustralia arising in connection with this Report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in the Report and are subject to the scope limitations set out in the Report.

The opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the date of preparation of the Report. GHD has no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was prepared.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD described in this Report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. Regional Hydrogeology

The mines operate within the Latrobe Valley Depression (LVD) that forms part of the larger Gippsland Basin. The LVD lies at the western end of the onshore part of the Basin. Three main lignite bearing sequences occur in the LVD, and are the Traralgon, Morwell and Yallourn Formations belonging to the Latrobe Valley Group (previously referred to as the Latrobe Valley Coal Measures). The Seaspray Group is a succession of marine limestones and marls that accumulated as a facies equivalent of the Latrobe Valley Group and extends over of the near coastal onshore and offshore parts of the Gippsland basin. A regional cross section (Figure 1) shows the Balook Formation, a transitional sand facies, forming the boundary between the mostly non-marine lignites and interseams to the west and the marine carbonates to the east. The Lower Cretaceous Strzelecki Group and Palaeozoic sediments form the basement to the younger Cenozoic sediments.

Volcanism within the basin resulted in the Thorpdale and Carrajung Volcanics. The Thorpdale Volcanics are interbedded with the Morwell Formation sediments particularly in the western sections of the LVD. The Carrajung Volcanics are found interbedded with the deeper Traralgon Formation.

Non-coal material between lignite seams is termed interseam and is comprised of sand, silt and clay. The interseam lithology can change rapidly due to the mode of deposition and can contain local and regional scale aquifers depending on the extent and hydraulic properties of the sand units. Some aquifers extend over large areas, and, partly through complex structures, into the offshore part of the Gippsland Basin. Other aquifers are only of local extent.

Two major Tertiary age aquifer systems occur in the Latrobe Valley and are separated by less permeable zones (aquitards) consisting of coal, clay and silt. These two systems are interbedded with weathered basalt units of variable thickness. A group of generally unconfined to semi-confined aquifers of Pliocene to Recent age can be considered as representing a third, Shallow Aquifer System (SAS). The term “system” has been adopted in recognition of the complexity of the regional hydrogeology, characterised by interbedded fluvial to lacustrine sequences containing sand, gravel as well as basalt aquifers that are rarely continuous throughout the region and resulting in aquifers of various thickness, lateral extent and interconnectivity.

For the purpose of this report, three regional aquifer systems are defined. These aquifers represent the Shallow, Morwell Formation (MFAS) and Traralgon Formation Aquifer Systems (TFAS) in the western part of the Gippsland Basin. At a smaller regional scale, Figure 2 shows a hydrogeological cross-section from the Yallourn through Hazelwood and eastward to the Loy Yang Mines and show the major aquifers within the Latrobe Valley Mining area.

Shallow Aquifer System (SAS)

This system consists of unconfined and semi-confined aquifers in the upper part of the stratigraphic sequence and typically hosts the groundwater table. The aquifers of the SAS include the surficial Haunted Hills gravels and sands, as well as the alluvial sediments and sands in the Hazelwood Formation and the Yallourn Interseam. In the Latrobe Valley the SAS provides low yielding supply for domestic and agricultural purposes and has only required intermittent dewatering at Yallourn Mine. It is considered a local scale aquifer.

Morwell Formation Aquifer System (MFAS)

In the western part of the basin this generally confined aquifer system comprises the M1, M1A, M1B, M2A, M2B and M2C Aquifers. It consists of interbedded sands and clays, between coal seams and, minor fractured basalts within the Morwell Formation. The MFAS extends eastward as far as Kilmany where it meets the barrier sand sequence of the Balook Formation. The confined aquifers of this system generally occur between 100 m and 500 m beneath the present surface and represent an intermediate scale groundwater flow system.

Groundwater is extracted from the MFAS from mining operations at Yallourn, Hazelwood and Loy Yang mines, and for domestic and agricultural activities in the eastern Latrobe Valley. The MFAS in the Latrobe Valley falls within the Rosedale Groundwater Management Area (GMA) – Zone 1 and Stratford GMA – Zone 1, depending on bore depth.

M2/Traralgon Formation Aquifer System (M2/TFAS)

This confined aquifer system is of regional scale and extends across the entire Gippsland Basin. Onshore it consists of interbedded sands, clays, coals and basalts (M2, Traralgon Aquifers), and offshore consists of interbedded sandstones, mudstone, coals, and basalts (Latrobe Group Aquifers). The uppermost Traralgon Formation (T1) coal extends westwards, towards Hazelwood Mine where it comes into direct contact with the basal M2 units of the Morwell Formation, as shown in Figure 2.

Onshore, groundwater is extracted from this aquifer system as part of mining operations at Loy Yang and Hazelwood Mines, for agricultural and industrial supplies in the southern Gippsland Basin, and offshore for oil and gas production activities. Apart from structural highs on the basin margins where these sediments may be exposed, aquifers belonging to this system occur between 150 and 1500 m beneath the present surface. The groundwater extractions from the TFAS at Loy Yang mine and M2 extractions at Hazelwood Mine are from the Stratford GMA – Zone 1.

In Appendix B is a summary of recent hydrogeological reports, which could further the understanding of the hydrogeological processes in the Latrobe Valley.

Regional Hydrogeological Section Thorpdale to Lake Wellington

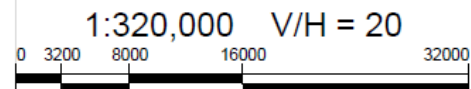
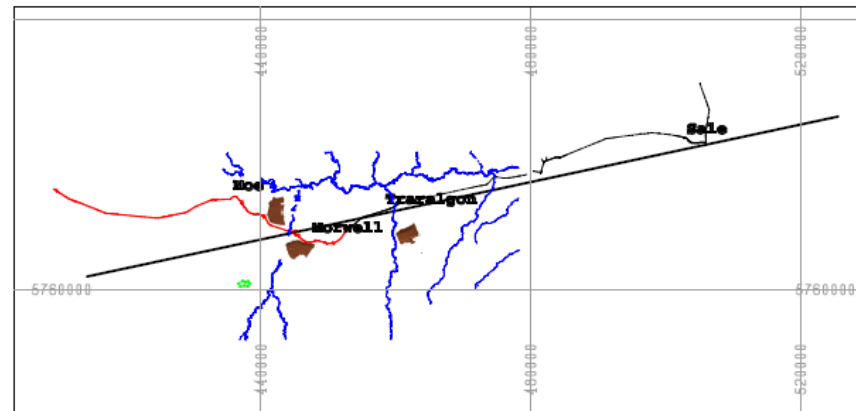
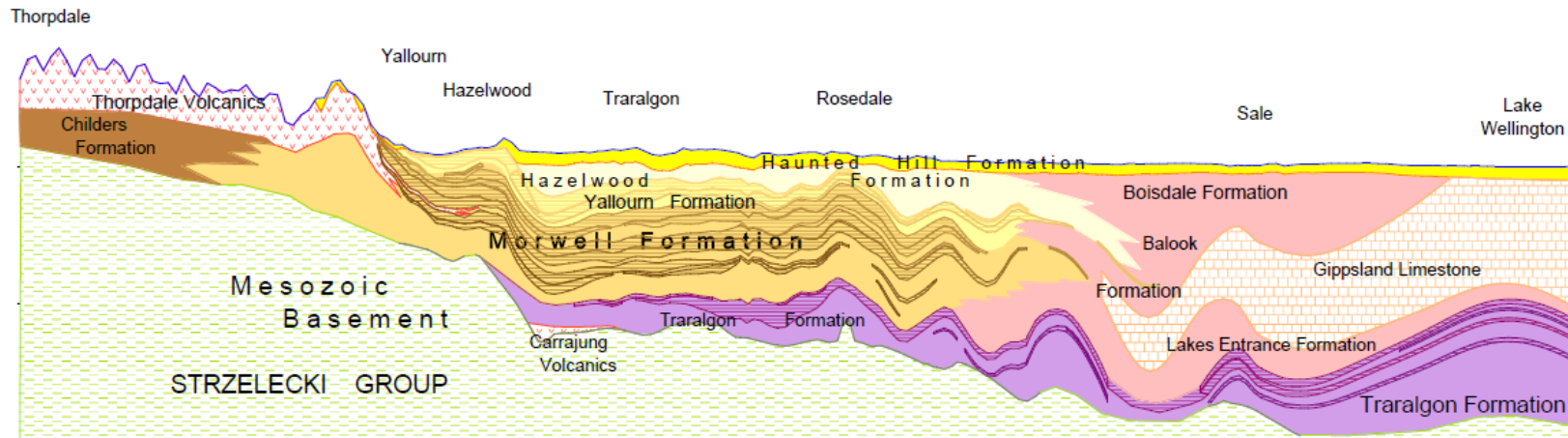


Figure 1 Onshore Gippsland Basin Regional Cross Section

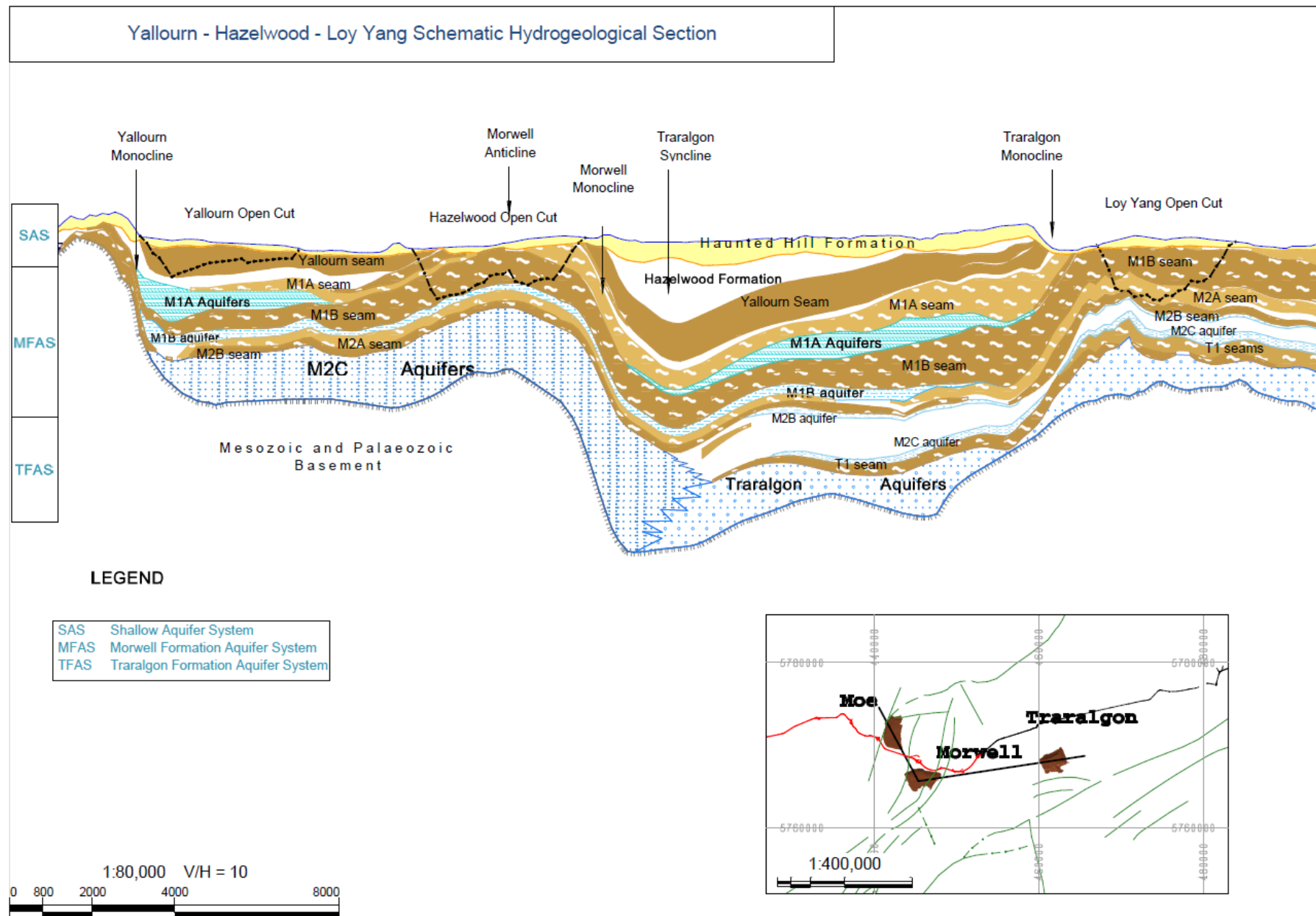


Figure 2 Yallourn – Hazelwood – Loy Yang Hydrogeological Cross Section

3. Groundwater Extractions

3.1 Groundwater Extractions 2020/21

Conditions 8 and 9 of the mines' groundwater licences issued under Section 51 of the Water Act, require the mines to keep an accurate record of the quantity of groundwater extractions. To comply with these requirements each mine provides the groundwater extraction volume from individual bores. This data is compiled and then reported monthly and annually by aquifer system.

The method for determining groundwater extraction volumes varies at each mine and was summarised in the 2015 to 2020 Five Year Review (GHD 2021). Southern Rural Water (SRW) completed audits of the metering practises at each mine in 2013 and again in 2018. Each pump bore is metered at the headworks at Hazelwood Mine and Yallourn Mine (Maryvale Field). At Loy Yang Mine all T2/TFAS pump bores and the majority of the MFAS bores are metered separately at the headwork. Several MFAS bores are however metered collectively; the total discharge is metered and the flow is assigned to each bore based on the individual bore flow rates and pump hours recorded at each bore. At the Yallourn North Open Cut M1A pump bores are metered collectively due to the low flows as noted in Appendix C.

The total groundwater extracted over the July 2020 to June 2021 period is 24,929.1 ML. Table 3 summarises the number of operational bores at each mine and extracted volumes for each aquifer system. Appendix C contains details of annual flow volumes and bore locations for individual bores and total annual flows for each aquifer from July 2020 to June 2021 at each of the mines. Pump bore location plans for each mine as at the end of June 2021 are also shown in Appendix C. At Hazelwood Mine, four M2/TFAS aquifer and eight MFAS aquifer pump bores were commissioned around the perimeter of the mine during the review period. Pumping operations at Hazelwood Mine are being transferred from the in-pit pump bores to the perimeter pump bores in preparation for mine rehabilitation and rising pit lake levels. At Loy Yang Mine Appendix C shows the location details of three M1B Aquifer pump bores which are yet to be commissioned.

The groundwater licences granted to each mine show the monthly and annual licenced extraction volumes for the M2/TFAS, MFAS and Haunted Hill Aquifer. Table 3 provides a comparison between the actual extraction for the period July 2020 to June 2021 and the licenced volumes. The percentage of unused extraction allocations were 42.2%, 38.6% and 46.3% for Hazelwood, Loy Yang and Yallourn mines respectively. The total volume of unused allocation for the 2020/21 period was 17,226.4 ML, which represents 40.9% of the total licenced extraction volume of 42,155.5 ML. The total extraction continues to be less than licenced due to improved efficiency of mine depressurisations systems, a better understanding of aquifer interactions at the mines and adoption of a risk-based approach in determining drawdown requirements. Note that there was no Haunted Hill Aquifer extraction at Yallourn Mine in the review period.

The monthly flows were also below the licenced monthly volumes for each aquifer at each mine as shown in Table 4.

The Latrobe Valley mines fall within the Rosedale Zone 1 and Stratford Zone 1 GMAs. Bores are assigned to a GMA based on screen depth below pre-mine natural surface, and for each pump bore this is shown in Appendix C.

Table 3 Latrobe Valley Mines Licensed & Actual Groundwater Extraction 2020/21

Mine	Licensed Aquifer	Regional Aquifer System	No. of Pump Bores	Volume Extracted (ML)	Licensed Volume (ML)	Volume Unused (ML)	Percentage Unused %
Hazelwood	Haunted Hill	SAS	0	0	0	0	-
	Morwell (M1)	MFAS	15	1,059.3	3,212	2,152.7	67.0%
	Morwell (M2)	M2/TFAS	8	10,751.2	17,268	6,516.8	37.7%
Loy Yang	Haunted Hill	SAS	0	0	0	0	-
	Morwell (M1B)	MFAS	3	0	1,295	1,295	100%
	Morwell (M2B)	MFAS	0	0	30	30	100%
	Morwell (M2C)	MFAS	11	2,945.2	4,400	1,454.8	33.1%
	Traralgon Fm	M2/TFAS	6	8,899.2	13,578	4,678.8	34.5%
Yallourn *	Haunted Hill	SAS	0	0	575	575	100%
	Morwell	MFAS	2*	1,274.2	1,825.0	550.8	30.2%
	Morwell (M2)	M2/TFAS	0	0	0	0	-
Totals							
	Haunted Hill	SAS		0	547.5	547.5	100%
	Morwell	MFAS	23	5,278.7	10,762	5483.3	51.0%
	M2/Traralgon	M2/TFAS	14	19,650.4	30,846	11195.6	36.3%
	TOTAL		82	24,929.1	42,155.5	17,226.4	40.9 %

* Yallourn Mine pump bores only; excludes YNOC pump bores - see Appendix C for details

Table 4 *Latrobe Valley Mines Licensed & Actual Monthly Groundwater Extraction Yallourn Mine 2020/21*

Month	Yallourn Actual MFAS ML/Month	Yallourn Licenced MFAS ML/Month
July	107.0	152.1
August	107.1	152.1
September	104.3	152.1
October	107.5	152.1
November	103.8	152.1
December	112.6	152.1
January	107.4	152.1
February	98.8	152.1
March	111.2	152.1
April	105.8	152.1
May	105.8	152.1
June	103.0	152.1

Table 5 *Latrobe Valley Mines Licensed & Actual Monthly Groundwater Extraction Hazelwood Mine 2020/21*

Month	Hazelwood Actual MFAS ML/Month	Hazelwood Licenced MFAS ML/Month*	Hazelwood Actual M2/TFAS ML/Month	Hazelwood Licenced M2/TFAS ML/Month
July	84.5	267.7	1,042.4	1,439
August	70.3	267.7	888.4	1,439
September	74.4	267.7	881.7	1,439
October	58.4	267.7	795.0	1,439
November	77.2	267.7	950.7	1,439
December	62.3	267.7	802.6	1,439
January	92.0	267.7	965.7	1,439
February	88.4	267.7	810.9	1,439
March	109.1	267.7	994.2	1,439
April	117.5	267.7	1,010.6	1,439
May	119.4	267.7	804.9	1,439
June	105.7	267.7	804.1	1,439

Table 6 Latrobe Valley Mines Licensed & Actual Monthly Groundwater Extraction Loy Yang Mine 2020/21

Month	Loy Yang Actual MFAS (M1B/ M2B) ML/Month	Loy Yang Licenced MFAS (M1B / M2B) ML/Month	Loy Yang Actual MFAS (M2C) ML/Month	Loy Yang Licenced MFAS (M2C) ML/Month	Loy Yang Actual M2/TFAS ML/Month	Loy Yang Licenced M2/TFAS ML/Month
July	0 / 0	108 / 2.5	239.1	366	871.9	1,131
August	0 / 0	108 / 2.5	202.7	366	706.2	1,131
September	0 / 0	108 / 2.5	239.8	366	716.1	1,131
October	0 / 0	108 / 2.5	215.7	366	626.0	1,131
November	0 / 0	108 / 2.5	215.2	366	627.4	1,131
December	0 / 0	108 / 2.5	245.1	366	738.4	1,131
January	0 / 0	108 / 2.5	241.8	366	727.2	1,131
February	0 / 0	108 / 2.5	227.2	366	678.7	1,131
March	0 / 0	108 / 2.5	305.6	366	972.3	1,131
April	0 / 0	108 / 2.5	268.2	366	858.8	1,131
May	0 / 0	108 / 2.5	259.5	366	656.2	1,131
June	0 / 0	108 / 2.5	285.1	366	720.0	1,131

4. Regional Groundwater Levels

4.1 Monitoring Network

Details of the monitoring activities undertaken during the review period are required by Licence Attachment A (clause 23a). This section summarises the groundwater level monitoring undertaken in the 2020/21 period.

4.1.1 Scale of Monitoring

The licenced monitoring boundary (specified in Licence Attachment A) extends from Moe to east of Sale. Figure 3 and Figure 4 show the locations of the Latrobe Valley (LV) monitoring bores for the Morwell Formation and M2/Traralgon Formations respectively monitored as part of the regional program. Figure 5 shows the locations of bores monitoring the LV basement, Gippsland Limestone and SAS. The location of additional monitoring bores which may provide water level data to supplement the regional network are also shown (for information only) in these figures, along with the approximate boundary of the Gippsland Basin. Table 7 summarises the number of bores and number of discrete monitoring installations in each formation and the number monitored in the review period. Bores not monitored in the review period are highlighted in red in Appendix D Table D2.

The majority of bores comprising the regional groundwater monitoring network were constructed to monitor groundwater levels in the major regional MFAS and M2/TFAS aquifers which are the focus of the mine depressurisation programs. Several bores were reassigned from MFAS to M2/TFAS as noted in Appendix D, resulting in greater consistency in the potentiometric surface and groundwater trends for both aquifers.

It is noted that strata monitored in bores include coal seams and interseam splits within coal seams, as well as regionally extensive interseam aquifers. Instrumentation in individual bores include:

- Standpipes screening one aquifer
- Single aquifer piezometers
- A nest of vibrating wire piezometers monitoring different intervals in the one aquifer system
- Or multi aquifer piezometers with vibrating wire piezometers monitoring different aquifer systems in the one installation

Additional monitoring bore in the regional are comprised of State Observation Bore Network (SOBN) or labelled as “other monitoring bores” drilled for various hydrogeological assessments and are not part of the regional monitoring network as listed in Licence Attachment A. In the review period eight “other monitoring bores” were monitored and the results shown in Appendix D Table D3.

Table 7 Latrobe Valley Regional Bore Network Monitoring Installations

Formation	No. of Bores	Bores monitored FY21	No. of Screen / VWP	Screen / VWPs monitored FY21
Haunted Hill Formation (SAS)	7	5	9	6
Hazelwood Formation (SAS)	1	0	2	0
Yallourn Formation (SAS)	6	4	12	10
Morwell Formation Aquifer System (MFAS)	42	37	68	59
M2/Traralgon Formation Aquifer System (M2/TFAS)	69	56	87	70
Gippsland Limestone	1	1	1	1
Mesozoic Basement	2	2	3	3

4.1.2 Monitoring Frequency

Monitoring of the regional observation bore network is completed biannually with a summer and winter monitoring. The six-monthly monitoring interval has been appropriate for both monitoring trends in the systems and for asset management to indicate potential problems in individual bore performances. Details for each bore monitored in the 2020/21 program including location, surface level, monitored depth intervals, geological formation monitored, date last monitored, if listed on licence attachment, status of bore and the recorded groundwater levels relative to Australian Height Datum (m AHD) are contained in Appendix D.

In accordance with previous recommendations, bores that were formerly part of the Loy Yang Annual monitoring run are now monitored biannually and aligned with regional monitoring program and are included in monitoring data shown in Table 7 and bore plans. The publicly accessible Flynn bores drilled by Monash Energy and Driffield bore drilled by Exergen, which are monitored as part of the regional east run are also included in Table 7.

The number of M2/TFAS monitoring network bores has reduced to sixty-nine due to confirmation of instrument failure at 53352 in 2020 and removal of the Flynn bore 130217 as not a licenced bore and is inaccessible as located on private land. Bore 23788 a licenced bore previously excluded as the headworks has seized has been included and listed for rehabilitation. Of the sixty-nine M2/TFAS monitoring network bores thirteen were not monitored in the review period due to:

- Access issues at two bores (see Section 4.3.1)
- Bore and headworks rehabilitation issues at ten bores (see Section 4.3.2)
- One (100094) due to duplication

Five of the forty-two MFAS monitoring network bores were not monitored due to access issues (two) and headworks issues at the other three (details in Appendix D).

Eight of the eleven SAS bores were monitored with two bores not monitored due to access issues (13282 and 80493) and one bore 80496 requires surveying.

The number of basement bores has reduced to two with the confirmation of instrument failure at 53352 in 2020. Both basement bores were monitored in the review period. There were no external third party bore access requests in the review period.

4.1.3 Bore Rehabilitation.

One Morwell Formation piezometer was rehabilitated at bore 90344 v04, as discussed in section 7.1. In March 2021 bore 110032 was found damaged with the casing bent and requires rehabilitation.

4.2 Groundwater Monitoring Results

Discussion of issues arising from the monitoring results including significant variations to the predicted trends is required by Licence Attachment A (clause 23c). This section reviews monitoring results and trends against the 2025 predictions.

4.2.1 Groundwater Level Trends at Key Bores

To assist in the assessment of changes in groundwater levels in the regional aquifers, a series of key observation bores were selected (shown in Figure 3 to Figure 5). These bores were selected on the basis of length of record as well as location and are considered to provide representative groundwater level trends in the major aquifer systems across the Latrobe Valley. For bores with multiple VWPs, the instrument monitoring the regional aquifer sand unit consistent with the surrounding bores was selected where possible, rather than instruments monitoring the coal or other interseam material. Of the twenty-two key bores, nine are standpipes, six multi instrument vibrating wire piezometers (VWP) and seven standpipes which have been successfully rehabilitated with VWPs installed. Table 8 lists the key regional groundwater observation bores, the aquifer system monitored, and if it was monitored in the review period. Hydrographs for each of the key observation bores are contained in Appendix E.

The “Latrobe Valley Regional Groundwater and Land Level Monitoring Report - Five Year Review” (GHD 2021) has a prediction of water level at the key bores in 2025 based on the observed hydrograph trend, and these are

plotted on the bore hydrographs in Appendix E. Detailed spatial and vertical assessment of the trends and rates of decline within for the regional aquifer has been completed as part of the Five Year Review (GHD 2021).

The six M2/TFAS and seven MFAS key bores monitored in the review period in conjunction with the full network monitoring data and other available monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation.

M2/Traralgon Formation Aquifer System Trends 2020/21

The 2020/21 monitoring data shows the groundwater levels for the M2/TFAS bores typically continue to show steady declines in groundwater levels across the Latrobe Valley. Exceptions to this are:

- The standpipe is bore 10942 shows an overall gradual decline since 2013 and is assumed to be screening multiple higher M2 sands. The trend at piezometer (v02) which is monitoring a deeper sand, was similar to the standpipe until 2019 and has since shown a steeper decline. The cause of this decline is unclear as the M2/TFAS extractions have been stable over this period and show an overall decline since 2010.
- Bore 100093 in the Holey Plains area has stabilised since 2016.
- Bore 110034, located over 15 km north of Loy Yang shows fluctuations with pressures rising from 2017 to 2019 and now declining but still above the 2020 prediction. Given the distance of this bore from the mines, stable M2/TFAS extractions at the mines over this period, other factors such as local licenced extractors may also be contributing to the observed fluctuating trend.

Morwell Formation Aquifer System Trends 2020/21

MFAS key bore trends typically show a gradual decline in water levels with the exception of the following:

- Bore 13190 v05 monitors the M1B coal and showed a decrease in mid-2016. Bore 13190 v08 monitors the M1A interseam and shows an increased rate of decline since mid-2015 corresponding to the commissioning of M1A pump bore 26899 at Yallourn Mine and was marginally below the 2020 predictions.
- Bore 23263 (M1 interseam) shows a steeper declining trend in pressures since mid-2014 and then stabilisation since 2018. The increased rate of decline is due to the commissioning of M1 aquifer pump bores required for Hazelwood Mines West Field development in 2014 and 2016 resulting in the 2020 prediction based on observed trend being too high.
- Bore 52809 v10 monitors the M1A coal and shows an increasing trend that is above the 2020 prediction. The v04 piezometer is 162 m lower, monitors the M1B aquifer, and an increase in the rate of decline since 2019 associated with the depressurisation of this aquifer with the easterly mine expansion at Loy Yang Mine. This suggests the thick M1 coals which separate these piezometers acts as an aquitard and the upper piezometer is poorly connected to deeper MFAS layers which are impacted by the adjacent mine depressurisation.
- Bore 570011 shows a gradual declining trend and was marginally below the 2020 prediction. This bore is the most easterly in the network and over 40 km northeast of Loy Yang mine. It is in an area with a high density of licenced extractors (as shown in GHD 2016) which are likely to be contributing to the observed trend.

The variations from the predicted trends at bores 13190, 23263 and 52809 are not considered significant as were only marginally lower than the 2020 predictions and can be attributed to local influences due to changes in aquifer depressurisation pumping or mining that weren't accounted for in the 2020 prediction which were based on the trend from the previous pumping regime. Bore 570011 is distant from the mines and the deviation from the trend not considered significant as likely to be influenced by local extractors.

Typically, the MFAS shows an increasing rate of aquifer pressure decline with depth as noted above at 52809 where vertical drainage through the MFAS sequence is restricted by the presence of thick coal seams. In bores where the piezometers are relatively close in depth such as 52810 (v09 and v10 22 m separation) and 80445 (v09 and v10 28 m separation) similar declining trends and levels are observed in both instruments in the one bore.

The key bores confirm that the rate of decline in groundwater levels for the MFAS more variable spatially and vertically reflecting the generally reduced hydraulic connection between the various MFAS sands and lower pumping and aquifer transmissivity. Whereas the M2/TFAS continues to show a greater and more uniform rate of decline in aquifer pressures across the region in line with the higher pumping volumes and lateral aquifer connection.

Table 8 Key Regional Groundwater Observation Bores

Bore Number	Aquifer System	Monitored 2020/21	Comments
52883	SAS	Yes	VWP – steady slight decline
80493	SAS	No	VWP- access re-established headworks rehabilitated 2019. Access issues 2021. Increase in HHF from 2011 and Yallourn Fm steady
13190	MFAS	Yes	VWP - v05 influenced by N6899 start-up in 2015
23263	MFAS	Yes	Bore rehabilitated in Dec 2011. Monitors M1B aquifer increased rate of decline since mid-2014 due to H2721 and H3293 start-ups, steady from 2018
52809	MFAS	Yes	VWPs - v04 (M1A Interseam) declining trend steeper from 2019, V10 (M1A Coal) minor increase from 2018
52810	MFAS	No	VWPs - Headworks damaged restricting access to cables.
80445	MFAS	Yes	VWPs - declining trends
90324	MFAS	Yes	Standpipe performance checked 1998, declining trend some fluctuations
130165	MFAS	Yes	Bore Rehabilitated 2002 VW Piezometer installed, declining trend
440056	MFAS	Yes-Reading unreliable	Access re-established after highway duplications work. Anomalous, readings continuing. Requires assessment and rehabilitation.
570011	MFAS	Yes	Standpipe performance checked 1997, one anomalous data point, latest reading on declining trend.
10942	M2/TFAS	Yes	Bore rehabilitated 2011, VW Piezometers installed, s01 declining trend and v02 minor declining trend with fluctuations.
23607	M2/TFAS	Yes	Bore rehabilitated 2011 VW Piezometers installed and bore grouted, declining trend.
100093	M2/TFAS	Yes	Bore rehabilitated 2011 VW Piezometers installed and bore grouted, v01 stable trend and v02 resumed previous trend.
110034	M2/TFAS	Yes	Bore rehabilitated 2013, VW piezometers installed, reclassified as M2/TFAS 2013. Increasing trend 2017-2020, declining from January 2020
130167	M2/TFAS	Yes	Bore Rehabilitated 2006 VW Piezometers installed, steady declining trend
180177	M2/TFAS	Yes	Standpipe - steady declining trend some fluctuations.
190054	M2/TFAS	Yes-Reading unreliable	Standpipe -damage to surface casing – requires rehabilitation
210051	M2/TFAS	No	Standpipe performance checked 1998 – water level too deep to be monitored installation of VWPs required
440341	M2/TFAS	Yes -Reading unreliable	Standpipe performance checked 1997 – October 2019 reading on long term trend, 2020- 2021 data reading anomalous – requires rehabilitation
920007	M2/TFAS	No	Standpipe blocked - bore assessment/ rehabilitation required
190066	Gippsland Limestone	Yes	Standpipe performance checked 1997

Shallow Aquifer System Trends 2020/21

The SAS water level trend at key bore 52883 show a slight decline since the early 1990's. In contrast, monitoring at bore 80493 was re-established in 2019 and both SAS piezometers showed an increase from 2011 levels. However, this bore located on private land was not monitored in the review period due to access issues to confirm ongoing water level trends. The observed increase in groundwater levels in the surficial Haunted Hill Aquifer is greater than in the underlying Yallourn Formation. This suggest the surficial aquifer is influenced by long term seasonal trends such as the millennium drought whereas the low permeability of the deeper SAS formation limits this climatic influence.

Long-term changes in the hydrographic records are likely influenced by:

- Climatic trends
- Additional pumping by other groundwater users
- And depending on location, the impact of vertical drainage to the underlying formations and mine voids

Gippsland Limestone Trends 2020/21

The Gippsland Limestone bore shows stable water levels consistent with the previous trend of a minimal rate of decline since 2012. This is consistent with the low permeability of this formation, which limits connection to the underlying pumped aquifer M2/TFAS.

4.3 Bore Monitoring Network Issues

Issues with the network that restrict groundwater monitoring primarily relate to: inaccessible bores located on private land; and failed GI standpipes. As shown in Table 7, thirteen of the M2/TFAS bores, five MFAS bores and three SAS bores were not monitored in the review period. The bore access and bore condition issues are discussed in sections 4.3.1 and 4.3.2. Clause 23b of Licence Attachment A requires any amendments to the monitoring network to be detailed and these are discussed in sections 4.3.3 and 7 in relation to bore rehabilitation.

4.3.1 Bore Access

Bores with access issues include:

- Two M2/TFAS bores located in the Holey Plains State Park were not monitored: 100097 due to adverse access track conditions, and 100094 is it at the same site as 100096 which was monitored, and both monitor the same sand unit
- M2/TFAS bore 110042 was unable to be monitored due to private landowner access issues
- MFAS bores 13282 and 240047 and SAS bores 13282 and 80493 were unable to be monitored due to private landowner access issues

Discussion with landowners is ongoing and access has been periodically re-established at several bores including 13282 and 80493 however both bores were unable to be monitored in the review period as noted in Appendix D. Access to the bores identified above is a focus of future work program and this information can then be considered for future bore rehabilitation priorities.

4.3.2 Bore Condition

Bores which are unable to be monitored due to casing or headworks issues include:

- The standing water level at M2/TFAS bore 210051 is below 180 m depth and is difficult to monitor and requires installation of a VWP to enable ongoing monitoring. The access track, however, is not suitable for rig access, and would require significant work for bore rehabilitation to be completed.
- M2/TFAS bore 80495 and M2/TFAS/SAS bore 80496 were covered by illegal rubbish dumping which was removed by the council which also removed the headworks, and the cables could not be located. The bores are to be surveyed to locate and test the cables
- Blockages have been encountered in M2/TFAS bores 120122 and 51967

- The GI standpipes at M2/TFAS bores 61348 and 61726 are considered to have failed and M2/TFAS bore 920007 was damaged by vandalism
- Pressure gauge readings cannot be obtained from artesian M2/TFAS bore 23788 in the Moe area as the valve is seized and requires replacement
- The headworks at TFAS/MFAS bore 52810 was damaged resulting in the VWP cables being inaccessible. Repair and replacement of the headworks is planned.
- MFAS bores 13054 and 110032 have been damaged by roadworks and requires rehabilitation

As shown in Table 8, MFAS bore 440056 and M2/TFAS bore 190054 were monitored in the review period but the readings are not considered reliable due to casing damage and require rehabilitation.

Clauses 8 to 11 of Licence Attachment A refers to the groundwater monitoring bore maintenance and decommissioning requirements. The actions required to address various issues at bores are further discussed in Section 7.

- The six M2/TFAS and seven MFAS key bores monitored in the review period in conjunction with the full network monitoring data and other available monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation.
- Of the nine MFAS key bores, eight were monitored and one is considered to be unreliable with an anomalous trend, and in conjunction with the full network monitoring data and other available monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation to this aquifer.

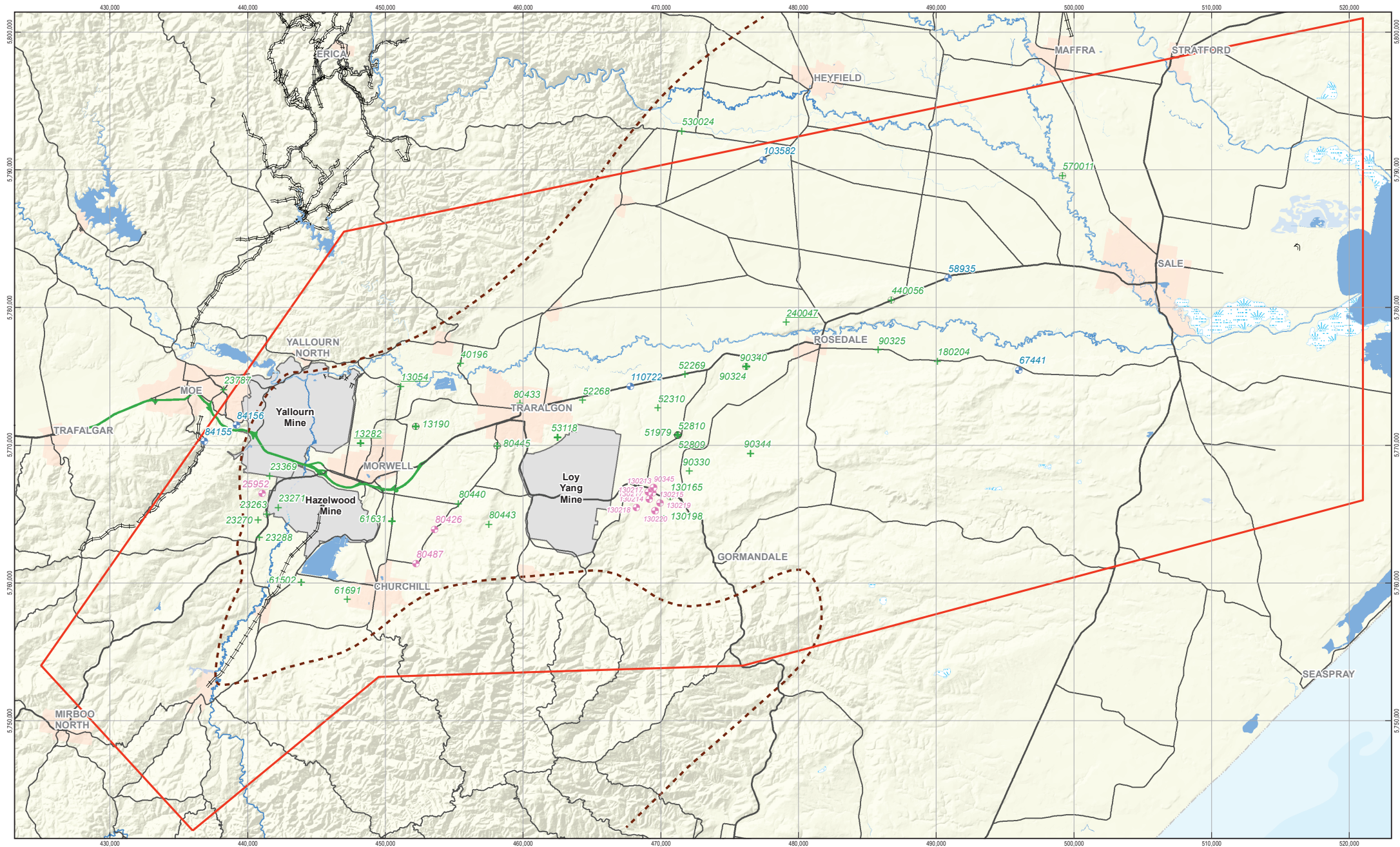
4.3.3 Amendments to the Monitoring List

Recommended amendments to the list of licenced monitoring bores include deletion of bores never monitored by the RMC, removal from the list of sealed bores, and removal from the list of bores and instruments where vibrating wire piezometers have failed. Appendix D Table D4 shows the bores to be removed from the original licenced list Table A attached to the regional monitoring program. These include:

- Sixteen bores that have never been monitored by the RMC
- Ten standpipes (s01) that have successfully been sealed and replaced by piezometers
- Eight standpipes sealed and decommissioned
- Fifteen bores where one or more piezometers have failed
- One bore within the Engie mining lease which have been impacted by mining

The current monitored network is shown in Appendix D Table D2. It includes licenced bores listed in Table A that were previously monitored as part of the Loy Yang Annual monitoring run but have now been included in regional program. Bores not monitored as discussed in Section 4.3.1 and 4.3.2 are shown in red and the rehabilitated bore is shown in green.

The Regional Monitoring Committee considered the status of “other” bores as shown on the bore location plans. It was concluded that these would not be included in the regional monitoring network but would, where accessible, continue to be monitored as part of the six monthly program and the data used to supplement the mines’ network, particularly for the 5 Year Review. These “other” bores are shown in Appendix D Table D3 and include the publicly accessible Monash Energy and Exergen bores, bore 62894 which is a replacement for 23271 and monitored by Engie, bore 26091 which is a replacement for 13282 monitored by Yallourn, and bore 31694 a former SEC bore. Data is being collected at bore 25952 and approval has been provided from Exergen to use this data.



Paper Size A3
 0 1,250 5,000 7,500 10,000
 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



- LEGEND**
- Licenced Monitoring Boundary
 - + LV Monitoring Bore (underlined not monitored)
 - + LV Key Bore
 - SOBN
 - Other Monitoring Bores
 - Gippsland Basin
 - Freeway
 - Highway
 - Arterial
 - Watercourse
 - Flat
 - Pondage
 - Lake
 - Swamp
 - River
 - Stream
 - Channel
 - Drain/Channel/Other
 - Railway
 - Mines
 - Township boundary



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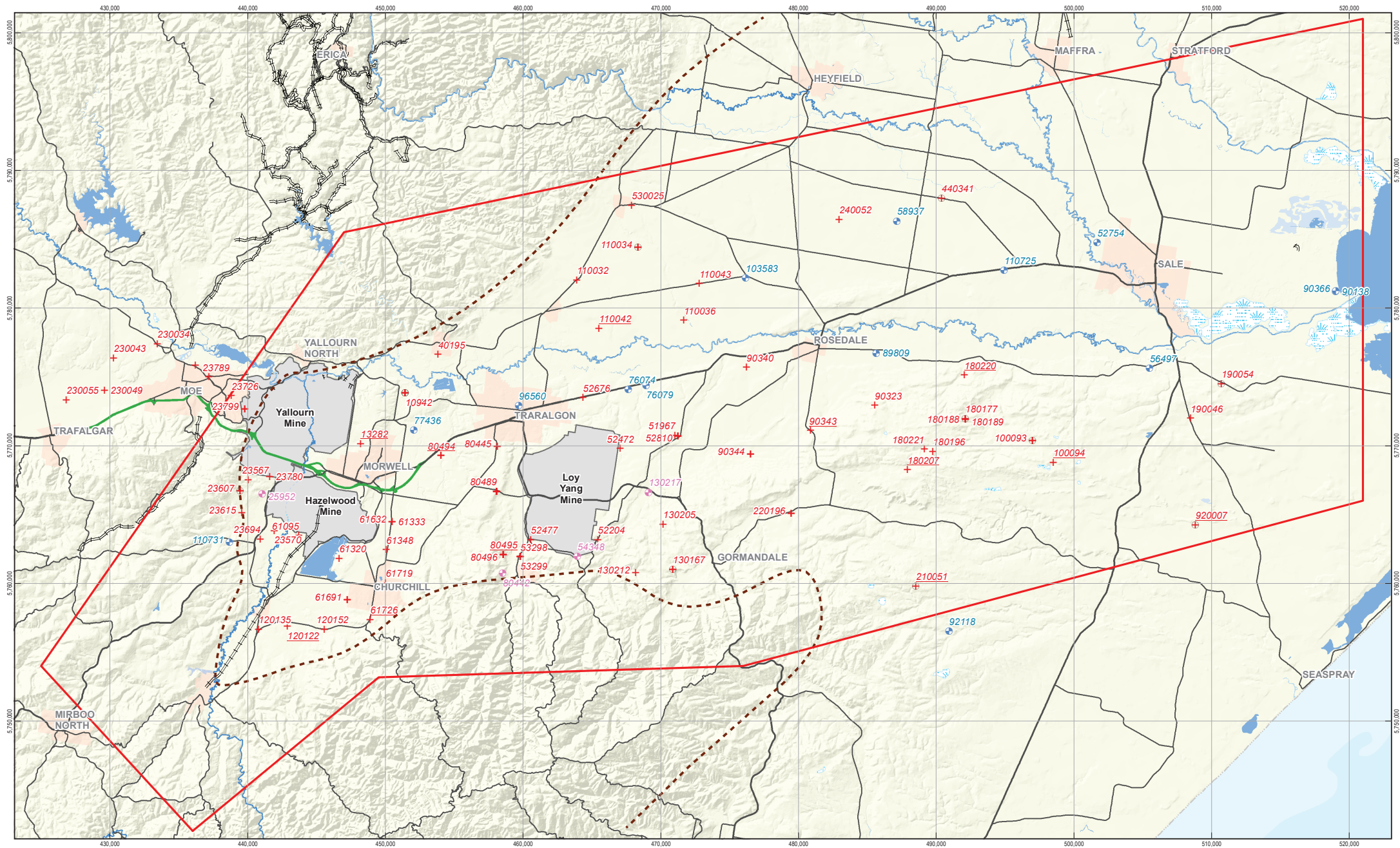
**Morwell Formation
 Aquifer System Bores**

Job Number 12554865
 Revision A
 Date 30 Sept 2021

Figure 3

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 Data source: DELWP, Vicmap, 2012. DELWP, GMS, 2013. GHD, Regional Groundwater Database, 2016. Created by:bsmyth



Paper Size A3
 0 1,250 5,000 7,500 10,000
 Metres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



- LEGEND**
- Licenced Monitoring Boundary
 - + LV Monitoring Bore (underlined not monitored)
 - + LV Key Bore
 - SOBN
 - Other Monitoring Bores
 - Gippsland Basin
 - Freeway
 - Highway
 - Arterial
 - Watercourse
 - Flat
 - Pondage
 - Lake
 - Swamp
 - River
 - Stream
 - Channel
 - Drain/Channel/Other
 - Railway
 - Mines
 - Township boundary



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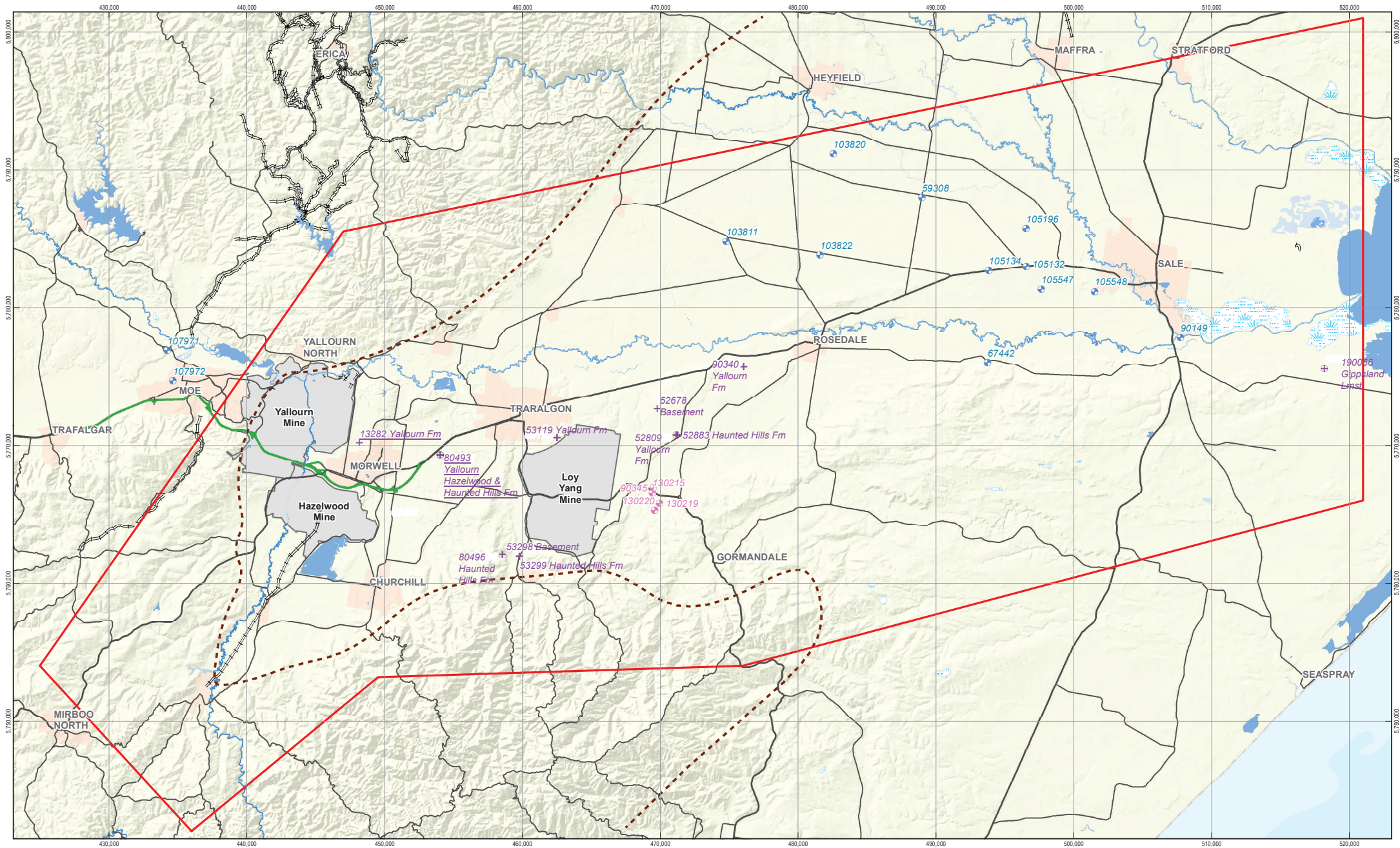
M2/Traralgon Formation Aquifer System Bores

Job Number 12554865
 Revision A
 Date 30 Sept 2016

Figure 4

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 Data source: Vicmap (2012), DSE GMS (2013), Regional Groundwater Database (2016). Created by:bsmyth



Paper Size A3
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 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



- | | | | |
|---|--|--|--|
| <ul style="list-style-type: none"> + Monitoring Bore (underlined not monitored) + Key Bore + SOBN Bores + Other Monitoring Bores - Licenced Monitoring Boundary | <ul style="list-style-type: none"> - Gippsland Basin - Freeway - Highway - Arterial - Watercourse - Flat | <ul style="list-style-type: none"> - Pondage - Lake - Swamp - River - Stream - Channel | <ul style="list-style-type: none"> - Drain/Channel/Other - Railway - Mines - Township boundary |
|---|--|--|--|



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Job Number | 12554865
 Revision | A
 Date | 30 Sept 2021

Basement, Yallourn, Haunted Hill & Gippsland Limestone Bores Figure 5

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Data source: Vicmap (2012), DSE GMS (2013), Regional Groundwater Database (2016). Created by bsmth

5. Land Level Monitoring

Land level surveying of the region is required by Licence Attachment A (clause 16) to determine the extent of land subsidence associated with mine depressurisation. Clause 17 stipulates that the survey is conducted at no greater than 5 year intervals and more frequently if significant subsidence is being recorded. Previous surveys were completed in mid 2019 and mid 2020 and survey results are contained in the report "Latrobe Valley Regional Groundwater and Land Level Monitoring Report, Five Year Review" (GHD, 2021).

Representatives for the mines periodically review the requirements and outputs of remote survey methods including Interferometric Synthetic Aperture Radar (InSAR) and their possible future application to the regional surveying program.

Surveyor General Office within DELWP are looking at subsidence monitoring in the region including InSAR following 2014 report on InSAR trial to monitor coastal subsidence. On behalf of the RMC, GHD has been liaising with the Surveyor General providing information on the location and status of mine survey mark network.

6. Groundwater and Subsidence Modelling

6.1 Groundwater Level Modelling

Clauses 25 and 26 of Licence Attachment A requires a comprehensive groundwater assessment to be completed at 5 yearly intervals and include groundwater modelling. The purpose of the modelling (clause 14) and states “groundwater modelling of the region shall be performed to assist in predicting the effects of the mine depressurisation on regional groundwater levels”.

Regional groundwater modelling has been undertaken as part of the Five-Year Review. Updates to the groundwater model and scenario modelling to 2040 have been completed and used aquifer pressure trend predictions beyond the term of the current licence (refer “Latrobe Valley Regional Groundwater and Land Level Monitoring Report, Five Year Review” (GHD, 2021)).

To support the previous Five-Year Review (2010 to 2015), a separate groundwater modelling report was completed and provided comprehensive documentation on the Latrobe Valley regional groundwater model configuration, calibration and predictive modelling (GHD 2016).

The five-year regional work program (Appendix A) shows groundwater modelling for 2020 to 2025 will be required to be completed in FY26.

6.2 Regional Subsidence Modelling

Described in Licence Attachment A (Clause 19), subsidence modelling of the region is required to assist in predicting the effects of groundwater depressurisation on land subsidence. Further, Clause 26 requires that the results from the land level modelling be included in a comprehensive groundwater assessment.

Previous subsidence modelling was completed in 1987 and 1994 using COMPAC which is a one-dimensional model used to predict land level changes at discrete sites. A summary of the past COMPAC modelling and predictions, can be found in the 2000 Five Year Review (Geo-Eng, 2000). In 2010 subsidence modelling was completed using the Latrobe Valley Regional groundwater model and the MODFLOW Subsidence and Aquifer Compaction (SUB) Package. Subsidence modelling was further developed in 2016 as outlined in the GHD 2016 modelling report that described the parameters, model configuration, calibration and predictive scenarios to 2025.

Subsidence modelling has been undertaken in 2021 using the MODFLOW Latrobe Valley Regional groundwater model and the new SUBS software package. The model calibration was updated against the extensive network of land level survey markers to include the 2019 and 2020 survey results. The results are reported in GHD, 2021.

The five-year regional work program (Appendix A) shows subsidence modelling for 2020 to 2025 period will be required to be completed in FY26.

7. Monitoring Network Asset Maintenance

Maintenance, rehabilitation and decommissioning of the monitoring bores is required by Licence Attachment A, clauses 8 to 12. The principles of the bore maintenance program are to secure bores from illegal use, vandalism and contamination and verifying the structural integrity of the bore casing and screens.

Monitoring network asset management was prescribed in the Regional Monitoring Management Plan (GHD 2013). The objectives were to manage the observation bore network and land level survey assets to provide reliable aquifer level and land level data in assessing the mine depressurisation environmental impacts. Groundwater level monitoring data is reviewed to determine bore performance and provide input to the bore maintenance program. Appendix E summarises the tasks that are completed annually for network asset maintenance, monitoring and reporting.

To prolong the life of existing bores a method to install vibrating wire piezometers into failed GI standpipes has been successfully implemented in an ongoing bore rehabilitation program. Bore sealing and decommissioning is undertaken only when all rehabilitation options have failed.

This section discusses bore rehabilitation activities completed in the review period.

7.1 2020/21 Bore Maintenance and Rehabilitation

The bore maintenance program contains key bores that were assigned a higher priority in order to provide continuity of monitoring at important sites. Bore rehabilitation has focussed on the assessment of vibrating wire terminal boxes to determine the status of the downhole instruments. The headworks and cables were checked to determine if downhole instrument failure or corrosion in the terminal boxes was responsible for the decline in number of operational piezometers. Where possible, the terminal boxes were repaired, or installation of replacement boxes proposed in the rehabilitation work program.

The terminal box was repaired at bore 90344 and instrument v04 is now operational (Table 9). The piezometer had been last read in 2018 and new readings are consistent with previous trends with the MFAS.

Table 9 2020/21 Bore Maintenance Program

Bore Number	Completed Work	Current Status
90344	Terminal box repairs VWP's assessed	VWP v04 assessed and operational.

7.2 2021/22 Bore Rehabilitation Work Program

With completion of the land level surveying and Five Year review and associated modelling, the regional work program for the 2021/22 period will focus on the delayed key bore rehabilitation program.

The key M2/TFAS and MFAS bores (Table 8) which are noted as requiring maintenance or showing anomalous trends, are the focus of the current bore rehabilitation program. There are four M2/TFAS bores: 190054, 210051, 440341 and 920097 and two MFAS bores 52810 and 440056 listed.

Due to the age and poor casing material used for the GI standpipe bores, which were predominately installed using 63 mm GI pipe, assessment in these is currently limited to running dummy probes or small diameter drill rods. Airlifting of these bores is not recommended. Instead, if a standpipe is open to the screen interval, two VWP's will be grouted in the screened interval.

Current priorities in the rehabilitation program may be altered if:

- A bore failure occurs, particularly in a key area;
- If it is artesian;
- Or a bore failure on private land where there may be access constraints

Therefore, not all bores identified for rehabilitation in a nominated year may be completed due to altered priorities or budget or access constraints.

In addition to the rehabilitation program outlined above, it is recommended that several bores installed in the Flynns Creek area, be decommissioned as part of a separate work package to allow ongoing access and monitoring. Discussion with the former lease holder and landowners is in progress and it is proposed that three boreholes in the area are retained for monitoring as part of the regional program; 130214 and 130220 are on roadside reserves and currently monitored and 130217 which is the only M2/TFAS bore but is on private land and its status is unknown. Ownership of the bores is understood to return to the landowner and bores would be fully grouted with VWPs installed and therefore not require any future decommissioning. With landowner and client approval, the proposed works would provide additional data to the regional program.

Table 10 *Proposed 2020/21 Bore Maintenance and Rehabilitation Program*

Bore Number	Maintenance / Rehabilitation / Decommission
52810, 80495, 80496,	Surveying, replace terminal boxes.
190054, 920007, 440341, 440056, 210051	Key Bore standpipe rehabilitation, piezometer installation or sealing
180177, 110093, 110096	Inspection and assessment.
130214*, 130217*, 130220*	Piezometer installation and completion of grouting.

*not part of regional rehabilitation program

8. Data Management

All regional aquifer pressure information is stored in a Borehole Database as required by clause 3 of Licence Attachment A. The acquisition of field aquifer pressure data is carried out under standard procedures documented in the Latrobe Valley Regional Monitoring Management Plan (GHD 2013) and conforms to the requirements of clause 5 of Licence Attachment A.

Prior to input to the database, a Quality Assurance procedure is followed to verify the data, as required by clause 6 of Licence Attachment A. The aquifer pressure data is verified by comparison with previous readings to determine significant fluctuation that may indicate either changes in bore performance or in aquifer conditions. Comparison of aquifer pressure readings with other bores in the same area provides an additional check on reading accuracy. All field records are retained on file. Bore data from a failed bore is flagged with a failed status in the database until the bore is sealed or rehabilitated.

Records of water levels, construction details, bore status and maintenance are kept and reviewed to assist in the casing condition assessment and hydrograph analysis.

Transfer of the regional monitoring data and bore installation details to DJPR is completed on request as part of the established Latrobe Valley borehole database transfers.

9. Conclusions

Licence Attachment A, clause 23a requires the annual report to include details of the monitoring activities undertaken in the review period. Groundwater extraction, groundwater level and land level monitoring activities for the current review period included the following:

- Groundwater extractions comply with the licences issued for each mine; the annual and monthly extractions were below licenced volumes in all aquifers. The total groundwater extracted within the mines over the review period was 24,929.1 ML. The total volume of unused allocation was 17,226.4 ML, which is 40.9% of the total licenced extraction volume of 42,155.5 ML. Total groundwater extraction continues to be less than licenced due to: improved efficiency of mine depressurisations systems; a better understanding of aquifer interactions at the mines; and adoption of a risk based approach in determining drawdown requirements.
- Groundwater monitoring as required by clause 12 of the groundwater extraction licences and clause 4 of Attachment A to the groundwater extraction licences is completed biannually with summer and winter monitoring rounds. In the review period, 97 of the 114 bores were monitored which included 148 of the 181 installations monitoring discrete intervals. This comprised of 37 bores monitoring the Morwell Formation Aquifer System (MFAS) and 56 bores monitoring the M2/Traralgon Formation Aquifer System (M2/TFAS). Additionally, two bores monitor groundwater levels in the underlying basement rock and one bore monitors the Gippsland Limestone. Eight of eleven bores installed in the Shallow Aquifer System (SAS) were monitored in the review period.
- No land level monitoring was completed in the reporting period. Reporting 2019 and 2020 surveying is contained in the 2015 – 2020 Five Year Review

Clause 23c requires the annual report to detail any issues arising from the monitoring results and significant variations to predicted trends. The 2020/21 monitoring results indicate:

- Groundwater levels for the M2/TFAS were generally in line with the previous 2020 predictions and continue to show steady declines in groundwater levels across the Latrobe Valley. Exceptions to this include bores 100093 where pressures have stabilised and both 10942v02 and 110034 which have shown a decline trend since 2019 after a period of increasing pressures from 2017 to 2020. These fluctuating trends are not considered significant and likely to be attributed to seasonal variability and influence of local extractors.
- The MFAS trends are generally more variable particularly at bores distant to the mines whereas the rate of decline for the M2/TFAS continues to typically be greater and more uniform, and these observations are consistent with trends recorded over a long period in the Latrobe Valley. An exception to this is an increasing trend observed in the MFAS uppermost piezometer (v10) at 52809. In contrast, the deeper piezometer (v04) shows an increase in the rate of decline since 2019 associated with the depressurisation of the M1B Aquifer with the easterly mine expansion at Loy Yang Mine.
- MFAS monitoring bores near Hazelwood West Field (23263) and Yallourn Maryvale Field (13190 v05) developments, where pump bores have been commissioned, locally showed an increase in the rate of depressurisation. At bore 23263 aquifer pressures have since stabilised.
- The variations from the predicted MFAS trends are not considered significant as can be attributed to local influences due to changes in aquifer depressurisation pumping or mining that weren't accounted for when the 2020 prediction were calculated.
- The Gippsland Limestone bore shows stable water trend consistent with the low permeability of this formation and poor connection to the underlying M2/TFAS
- Impacts to the overlying SAS are typically limited by the low permeability of the overlying coals and clays. Water level trends range from minimal rates of decline at 52883 to increasing trends previously observed at 80493. The increase in the shallow piezometer at 80493 monitoring the Haunted Hills Formation is more pronounced compared to the underlying piezometer monitoring the Yallourn Formation. This suggest the surficial aquifer is influenced by long term seasonal trends such as the millennium drought whereas the low permeability of the deeper SAS formation limits this climatic influence.

Clause 23b requires the annual report to detail amendments to the monitoring network. No formal monitoring network amendments have been adopted by the RMC in the review period. Proposed network amendments to the list of licenced bores include deletion 50 bores due to the follow reasons:

- Bores never monitored by the RMC (16)

- Sealed bores with piezometers installed (10) and without piezometers (8)
- Previously monitored by Engie within mining licence (1)
- Bores instruments where all or individual vibrating wire piezometers have failed (15)

M2/TFAS groundwater monitoring bore issues include:

- There are 10 key bores monitoring the M2/TFAS. Four key bores require rehabilitation:
 - 210051 due the standing water level being greater than 200 m depth
 - 190054 anomalous RWL trends following headworks damage from roadworks
 - 920007 has been damaged by vandalism
 - Anomalous water level trend has been confirmed at 4400341 and required assessment
- The six key bores monitored in the review period show consistent long term trends and in conjunction with the full network monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation
- In addition to the above key M2/TFAS monitoring bores not monitored, eleven other M2/TFAS bores were unable to be monitored due to: access restrictions at three bores; and bore condition issues at including GI casing due to corrosion or headworks damage at eight bores

MFAS groundwater monitoring bore issues include:

- Of the nine MFAS key bores, eight were monitored and one is considered to be unreliable with an anomalous trend, and in conjunction with the full network monitoring data, are considered sufficient to assess the impact of mine aquifer depressurisation to this aquifer. Headworks damage at key bore 52810 requires repair, and assessment of bore condition at 440056 is required as the recent data obtained after access was re-established following highway duplication, is considered unreliable.
- In addition to the above key MFAS monitoring bore not monitored, two MFAS bores were not monitored due to landowner access restriction and two bores due to headworks damage from roadworks
- The 2020/21 bore rehabilitation program included assessment of the vibrating wire terminal boxes at MFAS bore 90344 of which v04 was successfully rehabilitated

SAS groundwater monitoring bore issues include:

- SAS key bore 80493 is located on private land and was not accessible in the review period. Similarly bore 13282 also in private land was not accessible and additional SAS monitoring data is being sourced from bore 26091 close to the eastern boundary of the Yallourn mining licence to address this data gap
- Bore 80496 was not monitored in the review period due to headworks damage from clearing of the site and is to be surveyed to re-establish monitoring

9.1 Recommendations

The following work is recommended to address annual reporting requirements as outlined in clause 23 of Attachment A to the groundwater extraction licences:

Table 11 Proposed Recommendations

Date Required	Maintenance / Rehabilitation / Decommission
Dec 2021	Implement the bore rehabilitation program as outlined in Section 7.2 of this report in order to maintain the extent of the observation bore network.
Dec 2021	Amended regional monitoring bore program to address the fact that the original list of regional monitoring bores contained in Attachment A of the groundwater extraction licences did not reflect the program as originally implemented and other modifications since adopted.
Dec 2021	Continue to determine the status of bores with long term access issues. This information can then be considered for future bore rehabilitation priorities and monitoring network amendments.
Jan 2021 and July 2021	Continue groundwater monitoring at a six monthly frequency with summer and winter monitoring rounds, as review of the data has shown it to be appropriate for monitoring changes in aquifer pressures, and for asset management to indicate potential problems in individual bore performance.

Other recommendations to further the hydrogeological understanding and monitoring in the Latrobe Valley include:

- Continue to use the supplementary groundwater data in addition to the Latrobe Valley regional groundwater data in assessing groundwater trends
- Consider transition to remote land subsidence monitoring. This would require trialling of the remote method in conjunction with GPS based surveying to prove the technology has the required accuracy.
- Continue to assess opportunities to develop and support an InSAR research project to support the subsidence monitoring program

10. References

Geo-Eng, 2000, Latrobe Valley Regional Groundwater and Land Level Surface Monitoring Report – Five Year Review, Report Ref 1000/8505/99, September 2000.

GHD 2013, Latrobe Valley Regional Monitoring Management Plan, Report Ref 31/12376/13/217051, September 2013.

GHD 2016 Regional Groundwater Model Review 2015 Update. Report Ref 31/12376/16/251990, September 2016.

GHD 2021 Latrobe Valley Regional Groundwater and Land Level Monitoring Five Year Review 2015 to 2020, Draft Report in preparation Ref, 12534550-REP_RMC Five Year Review.

Appendices

Appendix A

Five Year Work Program

Five Year Work Program

Reporting Year	Groundwater Monitoring and Bore Rehabilitation	Land Level Monitoring	Groundwater Modelling	Reporting Requirements
1 July 2021 to 30 June 2022	Six monthly monitoring Bore Rehabilitation	Not required	Not required	Annual Report
1 July 2022 to 30 June 2023	Six monthly monitoring Bore Rehabilitation	Not required	Not required	Annual Report
1 July 2023 to 30 June 2024	Six monthly monitoring Bore Rehabilitation	Complete Scope and Tender for Subsidence Monitoring	Not required	Annual Report
1 July 2024 to 30 June 2025	Six monthly monitoring Bore Rehabilitation	Winter 2024 Survey Eastern Section Winter 2025 Survey Western Section	Not required	Annual Report
1 July 2025 to 30 June 2026	Six monthly monitoring	Not required	Complete Groundwater and Subsidence Modelling	Annual Report Five Year Review

**REGIONAL MONITORING PROGRAM
LATROBE VALLEY OPEN CUT COAL
MINES**

PREAMBLE

These requirements are to form part of the Approved Work Plan for each of the three open cut coal mines at Morwell, Yallourn and Loy Yang under the provisions of the Mineral Resources Development Act 1990. They outline the obligations and requirements in respect to monitoring and predicting changes in regional groundwater levels and land levels associated with groundwater extraction from the mines.

Over the past 20 or so years the former SECV has undertaken an extensive range of groundwater studies and investigations in the Latrobe Valley. Most importantly the work includes a regional groundwater monitoring network, regional land level surveys, and modelling to predict future changes in both groundwater levels and land levels as a result of mining operations. These programs continue to be carried out by Yallourn Energy Ltd., Hazelwood Power Corporation Ltd. and AGL Loy Yang Mine. The purpose of this attachment is to ensure the continuation of these regional monitoring and assessment programs.

The requirement specified in this attachment are directed at:

- maintaining an appropriate regional monitoring and assessment program;
- providing a mechanism to cooperatively adjust and refine the regional program to take account of:
 - results generated by the program;
 - changes in mining and depressurizing activity;
 - emerging regional issues associated with depressurizing activities;
 - advances in technology; and
- maintaining a cost effective program.

REGIONAL MONITORING PROGRAMS

1. A regional monitoring will be undertaken to record and ascertain the changes in groundwater levels and land levels. The programs shall include:-
 - Groundwater Monitoring;
 - Groundwater Modelling;
 - Land Level Surveying; and
 - Land Level Modelling.

2. For the purposes of this attachment, the region that shall be observed comprises the area bounded by the coordinates (AMG 436000E, 5742000N and 4250000E, 5754000N and 447000E5785500N and 521000E, 5801000N and 521000E, 5766000N and 476000E, 5754000N and 450000E, 5753000N) as shown on the attached plan.

Groundwater Monitoring

3. A groundwater monitoring network will be maintained in the region. Sufficient data will be collected to reliably monitor and predict regional groundwater levels and trends. Databases will be maintained to store and retrieve data related to those activities.
4. The bores included in the regional groundwater monitoring network together with the monitoring frequency are listed Table A.
5. Standing water levels shall be measured according to standard operating procedures.
6. All data shall be verified before submitting for storage. Measurements shall be checked against previous measurements for that bore to detect anomalies such as:
 - incorrect recording of data;
 - the casing has collapsed or become perforated;
 - the screen or slots have become blocked.
7. The occurrence and cause of data anomalies shall be recorded and procedures instituted to prevent their recurrence.
8. Preventative maintenance shall be carried out to all surface fittings, bores shall be kept secure from illegal use, vandalism or contamination.
9. The structural condition of the bores shall be verified to ascertain if:-
 - the casing has collapsed or become perforated;
 - the screen or slots have become blocked.
10. All damaged or malfunctioning bores shall be repaired substituted or replaced,
11. All unwanted damaged or failed bores shall be decommissioned.
12. Bore condition and the works carried out to repair and replace bores shall be reported.
13. The regional potentiometric surface levels for the main aquifers shall be reported as contour maps.

Groundwater Modelling

14. Groundwater modelling of the region shall be performed to assist in predicting the effects of mine depressurising on regional groundwater levels.

15. Reports and results of modelling runs shall contain the predictions, previous predictions and actual values for groundwater extractions and potentiometric levels of groundwater.

Land Level Surveying

16. Land Level Surveys of the region shall be undertaken to determine the extent of land subsidence associated with mine depressurising.
17. Survey intervals and reports of survey results shall be carried out at no greater than 5 year intervals and more frequently where significant subsidence is being recorded. The next program will be completed by the year 2019/2020
18. Surveys shall be undertaken to not less than third order accuracy.

Land Level Modelling

19. Land level modelling of the region shall be performed to assist in predicting the effects of groundwater depressurisation on land subsidence.

ARRANGEMENTS FOR MANAGING THE PROGRAM

20. The conduct of the monitoring, modelling and reporting is to be reviewed by the Regional Monitoring Committee having representatives of mine operators, (Energy Australia, Engie and AGL Loy Yang), The Department of Economic Development, Jobs, Transport & Resources and the Minister responsible for the *Water Act 1989* or his delegate. The Committee may make recommendations to the Minister responsible for the *Water Act 1989* or his delegate to amend the regional program in order to:
 - a. maintain and/or enhance the regional monitoring and assessment program; and
 - b. to adjust and refine the regional program to take account of:
 - results generated by the program;
 - changes in mining and depressurizing activity;
 - emerging regional issues associated with depressurizing activities;
 - advances in technology; and
 - c. maintaining a cost effective program.
21. The program shall be consistent with the programs previously carried out by the State Electricity Commission of Victoria to determine the impacts of dewatering/depressurisation both on site and regionally and must be maintained to the satisfaction of the Director of Compliance, Earth Resources Regulation and the Minister responsible for the *Water Act 1989* or his delegate.

REPORTING

22. The licensee shall ensure that results of the regional monitoring program are reported to the Minister responsible for the *Water Act* 1989 or his delegate and the Environmental Review Committee annually and at any other times as required under the Groundwater Licence.
23. An annual report shall be prepared each September detailing:
 - a. the monitoring activity undertaken in the past year;
 - b. any amendments to the monitoring network;
 - c. any issues arising from the monitoring results including significant variations to predicted trends.
24. The annual report shall be made available to members of the public on request.
25. A comprehensive review shall occur at not less than at 5 yearly intervals, or more frequently if circumstances change or as deemed necessary by the Regional Monitoring Committee.
24. The comprehensive review shall include:
 - a. detailed analysis of measured regional groundwater levels and trends;
 - b. detailed analysis of measured regional land subsidence. and trends;
 - c. contour maps of regional potentiometric surface levels for the main aquifers;
 - d. contour maps of regional land subsidence;
 - e. results from groundwater and land subsidence models;
 - f. based on the modelling, detailed predictions of future regional groundwater levels and land level trends;
 - g. any issues arising from the monitoring results including significant variations to previously predicted trends;
 - h. recommendations to amend and enhance the regional monitoring program;
 - i. where necessary, recommendations to manage regional issues resulting from mine depressurisation.
25. The licensee shall ensure that results of the comprehensive review are reported to the Minister responsible for the *Water Act* 1989 or his delegate.
26. The next review will be completed in 2022/2021

TABLE A

SEC	Inter	Seam-id	Aquifer	Easting	Northing	Transducer	Monitored Interval	Readings
Bore_id	Seam-id					(m)	from	per
							Screen	year
							To (m)	
51967	s01		Traralgon	470938	5770583		569.5	3
51979	s01		Traralgon	471063	5770578			3
52179	s02	bst	Basalt	459746	5760120		204	6
52204	s01	s219	Traralgon	465327	5762997		357	3
52310	s01		Morwell	469683	5772517		320	3
52472	s01		Morwell	466958	5769637		466.1	3
52477	s01		Traralgon	460442	5763006		171	3
52594	s01	s207	Traralgon	462932	5760496		110.7	3
52676	s01	s207	Traralgon	464241	5773325		672.5	3
52678	s01	s000	Basement	469681	5772509		694	3
52809	v01		Morwell	471137	5770563	449.8		3
52809	v02		Morwell	471137	5770563	430		3
52809	v03		Morwell	471137	5770563	405.3		3
52809	v04		Morwell	471137	5770563	392.6		3
52809	v05		Morwell	471137	5770563	350.1		3
52809	v06		Morwell	471137	5770563	319.9		3
52809	v07		Morwell	471137	5770563	289.7		3
52809	v08		Morwell	471137	5770563	255.7		3
52809	v09		Morwell	471137	5770563	245		3
52809	v10		Morwell	471137	5770563	230.8		3
52809	v11		Morwell	471137	5770563	205.1		3
52809	v12		Morwell	471137	5770563	180.1		3
52809	v13		Morwell	471137	5770563	149.9		3
52809	v14		Morwell	471137	5770563	125.2		3
52810	v04		Morwell	471153	5770560	595.3		3
52810	v05		Morwell	471153	5770560	587.3		3
52810	v06		Morwell	471153	5770560	580.3		3
52810	v07		Morwell	471153	5770560	543.8		3
52810	v08		Morwell	471153	5770560	507.8		3
52810	v09		Morwell	471153	5770560	480.3		3
52810	v10		Morwell	471153	5770560	458.3		3
52883	v01	s1000	Overburden	471070	5770575	69.8		3
52883	v02	s1000	Overburden	471070	5770575	36		3
52984	s01	s207	Traralgon	466677	5767549		350	3
52985	s01	s602	Morwell	466670	5767552		98	3
53038	s03	s304	Morwell	462234	5769287		327.2	3
53038	v01	s219	Traralgon	462234	5769287	414		3
53038	v02	s301s	Morwell	462234	5769287	387		3
53055	s01	s304	Morwell				384.5	3
53075	v01	s304	Morwell	463193	5768355	227.8		3
53075	v02	s408	Morwell	463193	5768355	177.8		3
53118	v01	s214	Traralgon	462399	5770406	542.6		3
53118	v02	s219	Traralgon	462399	5770406	523		3
53118	v03	s219	Traralgon	462399	5770406	508.7		3
53118	v04	s219	Traralgon	462399	5770406	499		3
53118	v05	s304	Morwell	462399	5770406	438.2		3
53118	v06	s306	Morwell	462399	5770406	454.4		3
53118	v07	s306	Morwell	462399	5770406	429.6		3
53118	v08	s402	Morwell	462399	5770406	413.3		3
53118	v09	s407	Morwell	462399	5770406	407.1		3
53118	v10	s500	Morwell	462399	5770406	399.6		3
53118	v11	s501	Morwell	462399	5770406	378.8		3
53118	v12	s600u	Morwell	462399	5770406	348.4		3
53118	v13	s700	Morwell	462399	5770406	336.7		3
53118	v14	s700	Morwell	462399	5770406	329		3
53118	v15	s700	Morwell	462399	5770406	303.2		3
53118	v16	s700	Morwell	462399	5770406	289		3
53118	v17	s701	Morwell	462399	5770406	263.1		3
53118	v18	s701	Morwell	462399	5770406	229.2		3
53118	v19	s800	Morwell	462399	5770406	208.4		3
53118	v20	s800	Morwell	462399	5770406	179		3
53119	v01	s801	Morwell	462411	5770403	136		3
53119	v02	s801	Morwell	462411	5770403	121.6		3

TABLE A

SEC	Inter	Seam-id	Aquifer	Easting	Northing	Transducer	Monitored Interval	Readings	
Bore_id	Seam-id					(m)	from	Screen To (m)	per year
53119	v03	s900	Morwell	462411	5770403	118.4			3
53119	v04	s900i	Morwell	462411	5770403	110.7			3
53119	v05	s900	Morwell	462411	5770403	90			3
53298	v01	s000	Basement	459683	5761763	224.8			3
53298	v02	s000	Basement	459683	5761763	184.4			3
53298	v03	s120	Basalt	459683	5761763	170.1			3
53298	v04	s120	Basalt	459683	5761763	138.2			3
53299	v01	s120	Basalt	459684	5761767	110			3
53299	v02	s207	Traralgon	459684	5761767	79.7			3
53299	v03	s207	Traralgon	459684	5761767	52.3			3
53299	v04	s1000	Overburden	459684	5761767	27.5			3
53352	v01	s000	Basement	460222	5764647	417.5			3
53352	v02	s000	Basement	460222	5764647	382.5			3
53353	s09	s500	Morwell	460216	5764636		40.2	43.2	3
53353	v01	s120	Basalt	460216	5764636	317.9			3
53353	v02	s120	Basalt	460216	5764636	280			3
53353	v03	s213	Traralgon	460216	5764636	236			3
53353	v04	s219	Traralgon	460216	5764636	213.7			3
53353	v05	s301s	Morwell	460216	5764636	181.4			3
53353	v06	s304	Morwell	460216	5764636	138.2			3
53353	v07	s306	Morwell	460216	5764636	87.2			3
53353	v08	s403	Morwell	460216	5764636	70			3
80445	v01	s304	Morwell	458006	5769795	579.9			3
80445	v02	s408	Morwell	458006	5769795	549.7			3
80445	v03	s500	Morwell	458006	5769795	525			3
80489	t01	s214	Traralgon	457978	5766531	589.5			3
80489	v02	s214	Traralgon	457978	5766531	589.5			3
80489	v03	s216	Traralgon	457978	5766531	576.6			3
80489	v04	s219	Traralgon	457978	5766531	568			3
80489	v05	s301s	Morwell	457978	5766531	532			3
80489	v06	s301s	Morwell	457978	5766531	517.7			3
80490	t02	s216	Traralgon	458524	5766257	329.7			3
80490	v01	s214	Traralgon	458524	5766257	341.4			3
80490	v03	s216	Traralgon	458524	5766257	329.7			3
80490	v04	s219	Traralgon	458524	5766257	320.9			3
80490	v05	s301s	Morwell	458524	5766257	287.1			3
80490	v06	s303s	Morwell	458524	5766257	256.6			3
80490	v07	s306	Morwell	458524	5766257	229.3			3
80490	v08	s306	Morwell	458524	5766257	214.6			3
80490	v09	s413	Morwell	458524	5766257	189.2			3
80491	t01	s207	Traralgon	460202	5768587	524.4			3
80491	v02	s207	Traralgon	460202	5768587	524.4			3
80491	v03	s214	Traralgon	460202	5768587	500.6			3
80491	v04	s215	Traralgon	460202	5768587	484.3			3
80491	v05	s219	Traralgon	460202	5768587	470			3
80491	v06	s306	Morwell	460202	5768587	416.5			3
80491	v07	s409	Morwell	460202	5768587	399.2			3
80491	v08	s501	Morwell	460202	5768587	365.3			3
80491	v09	s601	Morwell	460202	5768587	311.8			3
80491	v10	s701	Morwell	460202	5768587	225.6			3
80491	v11	s801	Morwell	460202	5768587	124.3			3
80491	v12	s900	Morwell	460202	5768587	81.8			3
80491	v12	s900	Morwell	460202	5768587	81.8			3
80495	s01	s120	Basalt	458455	5761927		236	239	3
80496	s06	s1000	Overburden	458455	5761927		4.5	6	3
80496	v01	s207	Traralgon	458455	5761927	132.8			3
80496	v02	s219	Traralgon	458455	5761927	110			3
80496	v03	s301s	Morwell	458455	5761927	82.6			3
80496	v04	s1000	Overburden	458455	5761927	52.1			3
80496	v05	s1000	Overburden	458455	5761927	26.5			3
90323	s01	m2	Morwell	485442	5772772		211	214	6
90324	s01	m1b	Morwell	476082	5775537		377	384	6
90325	s01	m1b	Morwell	485681	5776745		344.5	351	6
90330	s01	m2c	Morwell	471964	5767940		478	481	6
90335	s01	m1b	Morwell	480370	5775990		398	401	6
90335	s02	m1b	Morwell	480370	5775990		385	388	6
90339	s01	l2	Traralgon	475590	5772706		632.5	652	6

TABLE A

SEC	Inter	Seam-id	Aquifer	Easting	Northing	Transducer	Monitored Interval		Readings
Ref_id	Seam-id					(m)	from	To (m)	per year
90340	v01	m2bco	Morwell	476111	5775526	545.4			6
90340	v03	m2c	Morwell	476111	5775526	496.4			6
90340	v04	m2s	Morwell	476111	5775526	475.7			6
90340	v05	m2co	Morwell	476111	5775526	451			6
90340	v06	m2co	Morwell	476111	5775526	443.3			6
90340	v07	m2co	Morwell	476111	5775526	429.1			6
90340	v08	m2co	Morwell	476111	5775526	405.4			6
90340	v09	m1bco	Morwell	476111	5775526	365			6
90340	v10	m1bintr	Morwell	476111	5775526	350.8			6
90340	v11	m1bintr	Morwell	476111	5775526	336.6			6
90340	v12	m1bco	Morwell	476111	5775526	300.3			6
90340	v13	m1a	Morwell	476111	5775526	275.6			6
90340	v14	m1aco	Morwell	476111	5775526	245.4			6
90340	v16	m1aco	Morwell	476111	5775526	184.4			6
90340	v17	yco	Yallourn	476111	5775526	144.1			6
90340	v18	yco	Yallourn	476111	5775526	129.9			6
90343	s01	m2	Morwell	480772	5770910		322	325	6
100093	s01	t2	Traralgon	496899	5770187		116	122.5	6
100094	s01	t2	Traralgon	498392	5768601		210.5	211.5	6
100094	s02	t2	Traralgon	498392	5768601		196.5	197.5	6
100096	s01	t2	Traralgon	498379	5768515		196.5	202.5	6
100097	s01	t2	Traralgon	496354	5766284		228	234	6
110032	s01	m1b	Morwell	463793	5781840		413	419	6
110034	s01	m2c	Morwell	468243	5784230		398	404.5	6
110036	s01	t2	Traralgon	471558	5778928		724.3	727.6	6
110037	s01	m2	Morwell	457565	5776816		574.5	578	6
110037	s02	m2	Morwell	457565	5776816		559	564.2	6
110038	s01	m2	Morwell	462310	5778090		529.5	533	6
110038	s02	m2c	Morwell	462310	5778090		500	506.5	6
110040	s01	m1b	Morwell	460886	5777315		317	323.5	6
110042	s01	t2	Traralgon	465399	5778355		585.5	595	6
110043	s01	hhf	Overburden	472688	5781606		604	617	6
130165	s01	m2a	Morwell	470581	5766114		254.2	257.2	6
130167	s01	t2	Traralgon	470769	5760829		172	173.9	6
130176	s01	t2	Traralgon	470515	5766073		516	517	6
130176	s02	t1	Traralgon	470515	5766073		502.5	503.5	6
130183	s01	t2	Traralgon	467810	5763371		457.5	463.5	6
130183	s02	t1	Traralgon	467810	5763371		420	423	6
130198	s01	m2c	Morwell	470132	5764486		70	73	6
130205	s01	t1	Traralgon	470056	5764145		158.5	170.5	6
130212	s01	t2	Traralgon	468075	5760566		157	163	6
180177	s01	t2	Traralgon	492005	5771760		172.5	179	6
180188	s01	t2	Traralgon	492016	5771729		196.9	199.1	6
180189	s01	t2	Traralgon	492019	5771710		196	202	6
180196	s01	t2	Traralgon	489766	5769550		312.5	319	6
180204	s01	m1a	Morwell	489982	5775902		298	304.5	6
180207	s01	t2	Traralgon	487808	5768055		351.4	354.5	6
180220	s01	t2	Traralgon	491927	5774950		218	301.5	6
180221	s01	t2	Traralgon	489043	5769555		301	311	6
190046	s01	t2	Traralgon	508376	5771796		190.2	196.2	6
210051	s01	t2	Traralgon	488413	5759579	329.4	335.2	6	6
220196	s01	t2	Traralgon	479470	5765095		349.5	369.4	6
220197	s01	t2	Traralgon	479488	5765101		352	355	6
220197	s02	t2	Traralgon	479488	5765101		339	340.5	6
220197	s03	t2	Traralgon	479488	5765101		330.5	332.5	6
220197	s04	t2	Traralgon	479488	5765101		326	327.5	6
220197	s05	t2	Traralgon	479488	5765101		321	323.5	6
240047	s01	m1bintr	Morwell	478998	5778765		426	439	6
240052	s01	m2s	Morwell	482842	5786326		568.8	577.8	6
440056	s01	m1bs	Morwell	486646	5780346		398	401.5	6
440056	s02	m1bs	Morwell	486646	5780346		392	395	6
440058	s01	m2cs	Morwell	484085	5779315		526	535	6
440341	s01	t1	Traralgon	490285	5787763		660	666	6
530024	s01	m2co	Morwell	471409	5792603		234	240	6
530025	s01	m2d	Morwell	467784	5787307		407	413	6
920007	s01	t2	Traralgon	508727	5764044		725	737	6

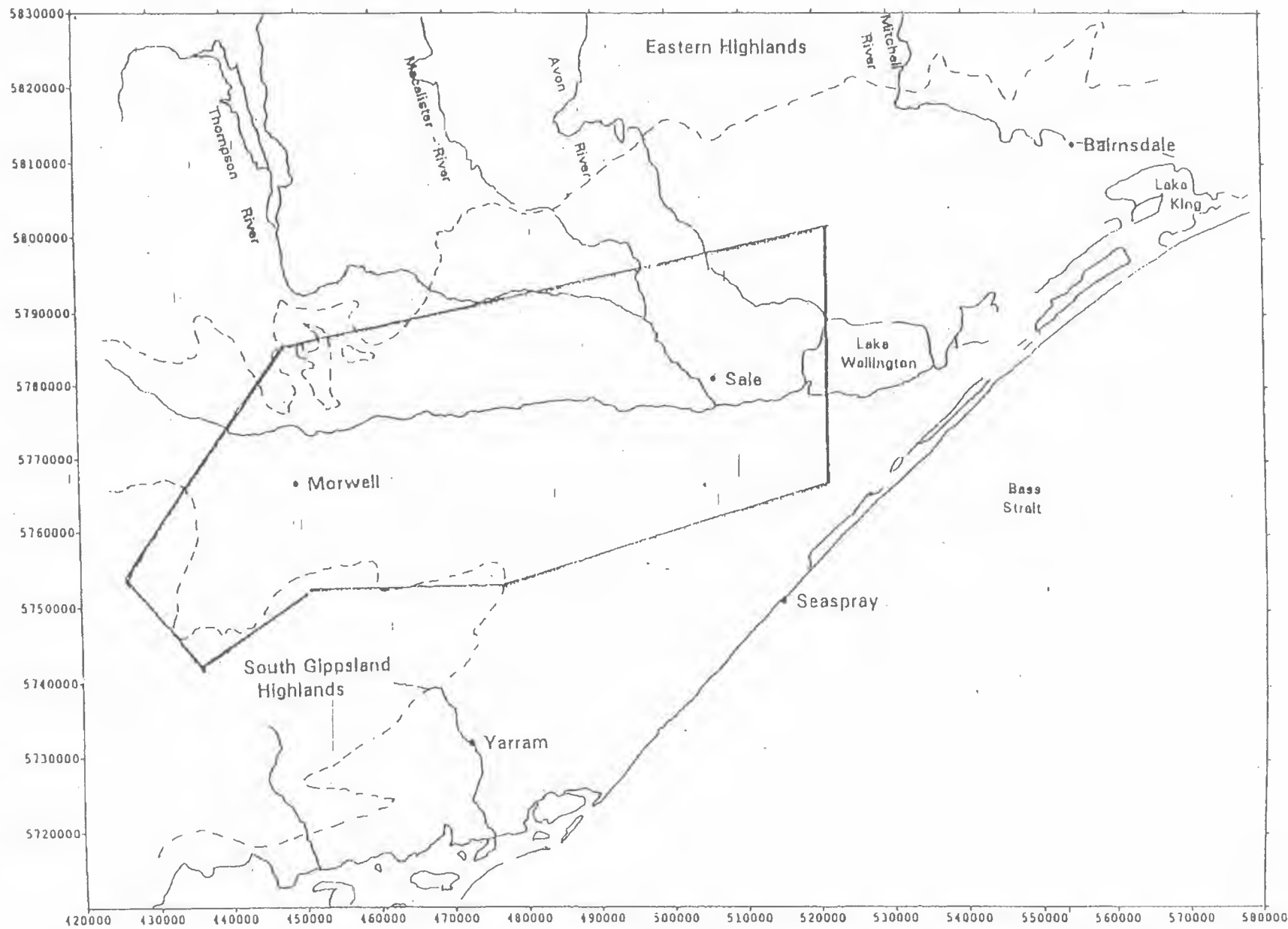
TABLE A

SEC	Inter	Seam-id	Aquifer	Easting	Northing	Transducer	Monitored Interval	Readings	
Bore_id	Seam-id					(m)	from	Screen To (m)	per year
40195	s01	m2s	Morwell	453719	5776453		456		12
40195	s02	m2s	Morwell	453719	5776453		449.5	452.5	12
40196	s01	m1b	Morwell	455344	5775761		331	334	12
40196	s02	m1b	Morwell	455344	5775761		309	315	12
10942	s01	m2	Morwell	451332	5773687				12
12034	s01	m2	Morwell	444974	5767679		297	301.9	3
12758	s01	m1b	Morwell	445713	5769485		250.5	263.5	12
13054	s01	m1b	Morwell	451007	5774117		324.5	344	12
13101	s01	m1s	Morwell	450630	5767792		606	613	12
13190	v01	m1b	Morwell	452103	5771191	460.4			12
13190	v02	m1b	Morwell	452103	5771191	439.6			12
13190	v03	m1b	Morwell	452103	5771191	412.3			12
13190	v04	m1a	Morwell	452103	5771191	385			12
13190	v05	m1aco	Morwell	452103	5771191	370.8			12
13190	v06	m1aco	Morwell	452103	5771191	358.2			12
13190	v07	m1aint	Morwell	452103	5771191	345.5			12
13190	v08	m1aint	Morwell	452103	5771191	327.2			12
13190	v09	m1aco	Morwell	452103	5771191	310			12
13282	v01	m1b	Morwell	448077	5769985	248.7			12
13282	v02	m1b	Morwell	448077	5769985	244.2			12
13282	v03	m1b	Morwell	448077	5769985	225.2			12
13282	v04	m1bco	Morwell	448077	5769985	210.2			12
13282	v05	m1bco	Morwell	448077	5769985	180.7			12
13282	v06		Morwell	448077	5769985	166.2			12
13282	v07	m1a	Morwell	448077	5769985	151.7			12
13282	v08		Morwell	448077	5769985	130.8			12
13282	v09	m1aco	Morwell	448077	5769985	109.7			12
13282	v10	yc	Yallourn	448077	5769985	84.7			12
22491	s01	m1s	Morwell	442511	5764494		87.5	89	12
23263	s01	m1a3	Morwell	441274	5764838		94.2	93.9	12
23263	s02	m1a2	Morwell	441274	5764838		91.1	91.4	12
23263	s03	m1a1	Morwell	441274	5764838		84.6	85.6	12
23270	s01	m1a3	Morwell	440655	5764395		45.7	46.3	12
23288	s01	m1a1	Morwell	440736	5763142		46.9	48.5	12
23369	s01	m1a1	Morwell	441501	5767590		143	144	12
23567	s01	a	Morwell	439942	5767338		124	130	12
23570	s01	bas	Basement	441817	5763673		181	187	12
23607	s01	m2a	Morwell	439335	5766552		83.6	90.1	12
23615	s01	a	Morwell	439463	5764961		59.1	66.1	12
23694	s01	m2a	Morwell	440805	5763059		65.6	66.6	12
23780	s01	m2a	Morwell	441500	5767578		187.5	194	12
24558	s01	m1a	Morwell	441178	5768165		164	170	12
24651	s01	b	Morwell	441440	5767969		170	173	12
24652	s01	a	Morwell	441526	5768866		192.5	195.5	12
61095	s01	m2	Morwell	443589	5763301		99.6	100.8	12
61320	s01	e	Morwell	446532	5761657		427.9	434	12
61333	s01	tl	Traralgon	450387	5764284		587.3	593.6	12
61348	s01	tl	Traralgon	449953	5762271		550.4	557.4	12
61502	s01	m1a	Morwell	443795	5759833		339	345	12
61502	s02	m1a	Morwell	443795	5759833		339	340.4	12
61631	v01	m1bco	Morwell	450379	5764307	294.4			12
61631	v02	m1bco	Morwell	450379	5764307	281.7			12
61631	v03	m1a	Morwell	450379	5764307	272.4			12
61631	v04	m1a	Morwell	450379	5764307	262.2			12
61631	v05	m1a	Morwell	450379	5764307	252			12
61631	v06	m1aco	Morwell	450379	5764307	234.8			12
61632	s01	t	Traralgon	450378	5764292		635.5	647.5	12
61691	v02		Morwell	447142	5758626	386.4			12
61691	v03		Morwell	447142	5758626	361.7			12
61691	v04	m1	Morwell	447142	5758626	301.6			12
61691	v05		Overburden	447142	5758626	222.1			12
61719	s01	m2s	Morwell	449912	5759871		309	306	12
61726	s01	m2s	Morwell	448784	5757198		321	347	12
120122	s01	m2A	Morwell	442762	5756708		291	297.5	12
120122	s02	m2A	Morwell	442762	5756708		280	287	12
120135	s01	m2A	Morwell	440668	5756479		320	323	12



TABLE A

SEC Bore_id	Inter Seam-id	Seam-id	Aquifer	Easting	Northing	Transducer (m)	Monitored Interval from	Screen To (m)	Readings per year
120141	p01	ob	Overburden	442169	5756799				12
120141	p02	ys	Yallourn	442169	5756799				12
120141	p03	ys	Yallourn	442169	5756799				12
120141	p04	m1bco	Morwell	442169	5756799				12
120141	p05	m1bco	Morwell	442169	5756799				12
120141	p06	m1a	Morwell	442169	5756799				12
120152	s01		Traralgon	000000			32.4	638.4	12
23726	s01	m2	Morwell	438701	5773468		85	194	12
23787	s01	m1a3	Morwell	438151	5773869		09.1	215.1	12
23788	s01	m2	Morwell	436100	5775669		96.5	98	12
23789	s01	m2	Morwell	437084	5774827		158.5	164.5	12
23799	s01	a	Morwell	439674	5772504		211.5	214.5	12
230034	s01	m2	Morwell	433329	5777233		52	55	12
230043	s01	m2	Morwell	430147	5776203		144	156	12
230049	s01	m2	Morwell				210	219	12
230055	s01	m2	Morwell				176	180	12

R Nott, D Baker 28 December, 1995
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Regional Monitoring Requirements
 Latrobe Valley Open Cut Coal Mines
 Boundary of Regional Programs

 Boundary of Gippsland Groundwater basins
 Boundary of regional programs

WATER ACT 1989

Section 51

GROUNDWATER LICENCE No....
(Licence to take and use groundwater)

Objective

The objective of this licence is to allow the efficient depressurising of the open cut mine whilst minimising adverse impacts on the Gippsland Groundwater Basin.

Definitions

In this Licence

"Mining Licence" means a mining, licence issued under the provisions of the Electricity Industry Act 1993

"Approved work plan" means the mining licence work plan applicable to Mining Licence No 5003

"Regional monitoring program" means the monitoring program described in Part B of the approved work plan

"Rehabilitation plan" means a rehabilitation plan approved under the provisions of the electricity Industry Act 1993.

Preamble

The extraction of groundwater for the purpose of achieving safe and stable conditions in the mine is authorised under this Groundwater Licence issued by the Minister responsible for the Water Act, 1989, The administration of the licence may be delegated by the Minister to the Gippsland and Southern Rural Water Authority

The extraction of groundwater at mine sites in the Latrobe Valley results in a regional cone of depression of the groundwater and in ground subsidence.

The monitoring and reporting of regional groundwater and land level trends is to be carried out by the licensee as part of the approved work plan under the Mining Licence.

The Minister or his delegate may set annual charges under this licence to recover the cost incurred in

- ensuring compliance with licence conditions;
- assessing and reviewing the regional monitoring program; and
- managing and administering the licence.

Licence Authorisation

..... is authorised to take and use groundwater subject to the following conditions;

WATER ACT 1989

Section 51

1. This licence is valid for a period of thirty years from 1 September 1995.
2. The licensee is authorised to take and use groundwater to facilitate mining for coal and generation of electrical energy and purposes incidental thereto.
3. The licensee is authorised to extract groundwater from the aquifers at quantities and during the times specified in the First Schedule or on application by the licensee such other quantities and during such other times as from time to time approved by the Minister or his delegate.
4. The licensee may vary the maximum monthly rate of extraction from any particular aquifer or the maximum annual volume to be extracted from any particular aquifer provided that the total monthly rate of extraction and the total annual volume from all aquifers is not exceeded and shall report at monthly intervals such variations as they occur to the Minister or his delegate.
5. The licensee may only take and use groundwater under this licence on the land with respect to which the licensee holds a mining licence for themine.
6. Annual fee at date of issue \$......
7. The licensee shall pay annual charges for the forthcoming year due under the licence in quarterly installments or on an annual basis as agreed between the licensee and the Minister or his delegate.
8. The licensee shall meter all groundwater extractions and shall keep an accurate record of the quantity of groundwater taken or used under this Licence and allow the Minister or his delegate to inspect this record during normal business hours and to provide a copy of such record to the Minister or his delegate within seven days of a notice given by post to the licensee at the address contained in this licence.
9. The licensee shall provide to the Minister or his delegate annually details of the location of each bore from which groundwater is extracted under this licence.
10. By the issue of this licence the Minister or his delegate in no way accepts any liability for injury to any party arising as a consequence of any adverse effects that may be deemed to have been caused by the extraction of groundwater under the licence.
11. The licensee shall compensate any person where existing authorised use of water is adversely and materially affected by the taking of water under this licence. The compensation may be either financial or may be constituted by the making available of or granting access to water. If the licensee is unable to or unwilling to make compensation by the making available of or granting access to water in the quantities previously enjoyed by the person so affected then the amount of financial compensation payable be that as determined by a Valuer nominated by the president of the Victorian Division of the Australian Institute of Valuers and Land Economists (Inc).

WATER ACT 1989

Section 51

12. The licensee shall undertake a regional Monitoring program of the nature scope and extent as that previously undertaken by the State Electricity Commission of Victoria as detailed in the approved work plan and the information is to be provided on request to the Minister or his delegate and as required under the work plan.
13. All information obtained from the regional monitoring program belongs to the generation companies, the State Electricity Commission of Victoria and the Minister jointly.
14. The licensee must maintain the existing data bases, and undertake additional work that may be required from time to time by the Minister or his delegate to maintain the effectiveness of the regional monitoring program.
15. If the licensee fails to provide the information required under condition 12 the Minister or his delegate may undertake any necessary work to obtain the information and recover the costs of such work from the licensee.
16. The regional monitoring program and any remedial measures must be incorporated in the approved work plan and the rehabilitation plan to the satisfaction of the Minister or his delegate.
17. The licensee shall comply with the provisions in its mining licence, approved work plan and the rehabilitation plan dealing with the regional monitoring program and remedial action.



GEOFF COLEMAN
MINISTER FOR NATURAL RESOURCES

Appendix B

**Recent Gippsland Basin Hydrogeological
Reports**

Recent Gippsland Basin Hydrogeological Reports

Work with reference to the hydrogeology of the Gippsland Basin and Latrobe Valley has been completed as part of the Latrobe Valley Regional Rehabilitation Strategy (LVRRS). The preparation of the Strategy has involved extensive geotechnical, groundwater and surface water studies, the assessment of potential regional impacts on the environment, and the evaluation of future land use options and was completed in mid 2020. The Victorian Government has appointed Professor Rae Mackay to be the Latrobe Valley Mine Rehabilitation Commissioner to lead and coordinate planning and improvements to mine rehabilitation in the Latrobe Valley.

The other studies released include:

- Latrobe Valley Regional Water Study – Ecological Effects Assessment. A report to the Department of Environment, and Water and Planning. November 2020
- Holdgate G R & Sluiter I R (2021) The T0 coal seam in the Latrobe Valley: a revised age and implications to Traralgon Formation stratigraphy, Australian Journal of Earth Science. Feb 2021

A series of reports have also been completed for the Victorian Gas Program and reports relevant to hydrogeology of the Gippsland Basin include:

- Regional 3D geological framework model Gippsland Basin, Victoria. Technical Report 20 May 2020.
- Gippsland Groundwater Model (GGMv1.1) Groundwater impacts assessment – recalibration of numerical model, Onshore Gippsland Basin, Victoria. Technical Report 36 September 2020.
- Gippsland Groundwater Model (GGMv1.1) Groundwater impacts assessment –Conventional gas development scenarios, Onshore Gippsland Basin, Victoria. Technical Report 40 October 2020.
- Environment assessment of decommissioned petroleum wells using regional baseline data Onshore Gippsland Basin, Victoria. Technical Report 59 May 2021
- Site scale groundwater impact assessment. Onshore Gippsland Basin, Victoria Technical Report 61 May 2021

Appendix C

Annual Groundwater Extractions

HAZELWOOD, LOY YANG AND YALLOURN MINES

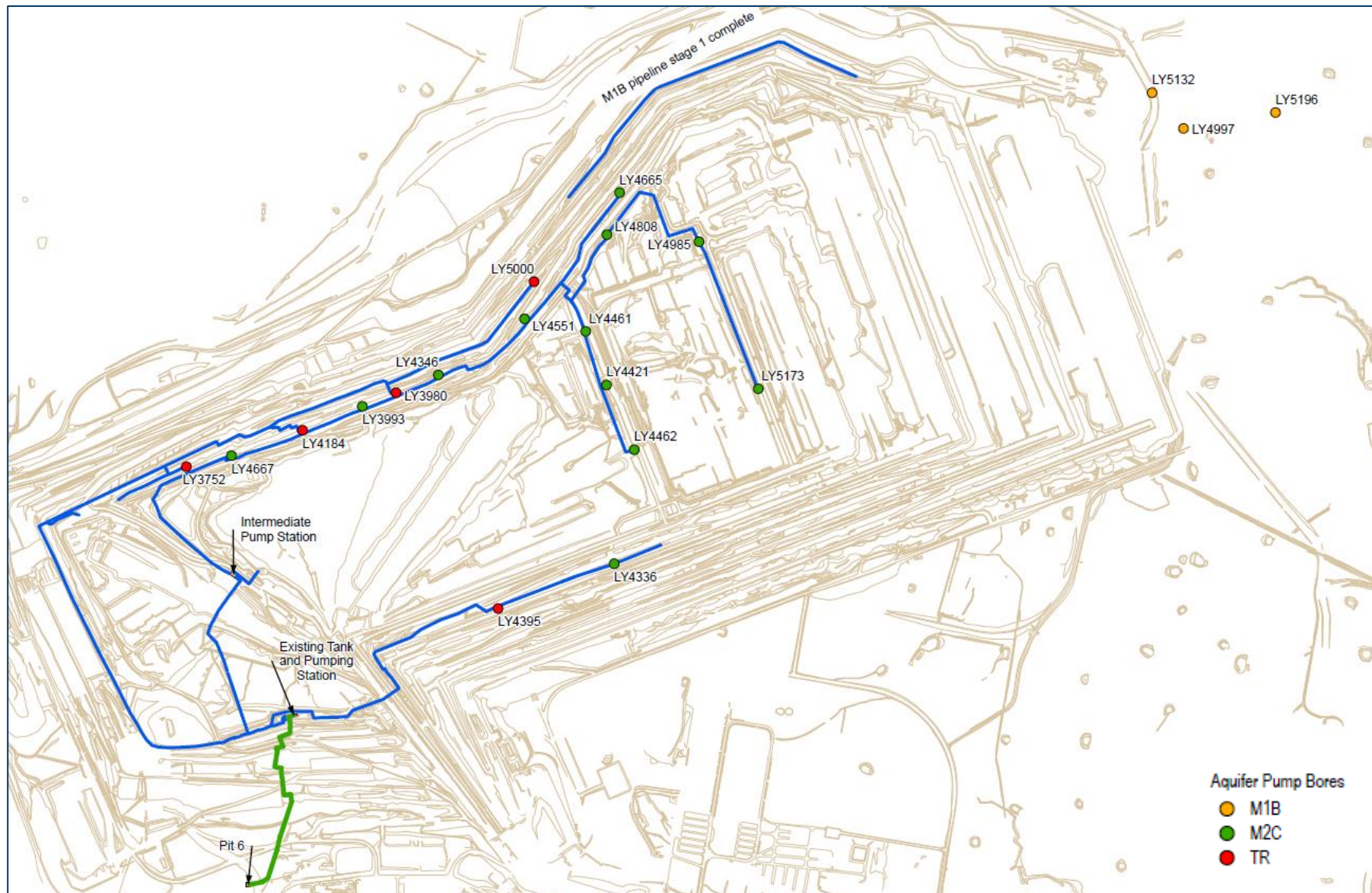
Location	Bore Number	Formation	Ground Level RL m AHD	Groundwater Management Area	GDA94 Easting	GDA94 Northing	Annual Flow (ML)	Total Flow (ML)	
Hazelwood									
	13705 / M3705	Morwell (M1)		Stratford Zone 1	444456.1	5766322.1	63.0		
	62300 / H2300	Morwell (M1)		Rosedale Zone 1	443953.9	5765499.2	40.2		
	62301 / H3201	Morwell (M1)		Rosedale Zone 1	443870.8	5766168.1	52.5		
	62520 / H2520	Morwell (M1)		Rosedale Zone 1	444173.0	5766280.7	122.5		
	62554 / H2554	Morwell (M1)		Stratford Zone 1	445464.2	5766671.8	300.1		
	62721 / H2721	Morwell (M1)		Rosedale Zone 1	443482.9	5765589.5	53.2		
	63293 / H3293	Morwell (M1)		Rosedale Zone 1	442981.6	5765357.9	181.0		
	64674 / H4674	Morwell (M1)	57.1	Rosedale Zone 1	442412.4	5765982.0	59.9		
	64675 / H4675	Morwell (M1)	50.9	Stratford Zone 1	444383.2	5766970.0	60.6		
	64676 / H4676	Morwell (M1)	49.9	Stratford Zone 1	443964.4	5766735.0	43.4		
	65040 / H5040	Morwell (M1)	47.2	Rosedale Zone 1	443383.4	5766282.0	15.9		
	65042 / H5042	Morwell (M1)	61.4	Stratford Zone 1	445906.0	5767191.0	15.9		
	65120 / H5120	Morwell (M1)	45.2	Rosedale Zone 1	442752.1	5765916.0	0.2		
	65121 / H5121	Morwell (M1)	61.2	Stratford Zone 1	446259.7	5767038.0	17.4		
	65122 / H5122	Morwell (M1)	60.5	Stratford Zone 1	446596.2	576687.0	33.5	1,059.3	
	13274 / M3274	Morwell (M2)		Stratford Zone 1	445825.45	5765921.0	2228.0		
	13333 / M3333	Morwell (M2)		Stratford Zone 1	445357.83	5766490.7	2041.1		
	13395 / M3395	Morwell (M2)		Stratford Zone 1	445467.25	5766209.1	1764.4		
	62326 / H2326	Morwell (M2)		Stratford Zone 1	445620.2	5766042.4	2755.5		
	64037 / H4037	Morwell (M2)	64.1	Stratford Zone 1	446964.1	5765368.0	606.5		
	64039 / H4040	Morwell (M2)	61.0	Stratford Zone 1	445661.8	5767249.0	124.4		
	64040 / H4040	Morwell (M2)	52.8	Stratford Zone 1	444853.8	5767112.0	491.8		
	64512 / H4512	Morwell (M2)	55.8	Stratford Zone 1	445255.3	5767221.0	739.5	10,751.2	
	Hazelwood Total Annual Flow							11,810.5	
Loy Yang									
	54997 / LY4997	Morwell (M1B)	52.0	Rosedale Zone 2	465492.4	5769963.8	0.0		
	55132 / LY5132	Morwell (M1B)	50.2	Rosedale Zone 2	465350.2	5770121.4	0.0		
	55196 / LY5196	Morwell (M1B)	58.7	Rosedale Zone 2	465902.7	5770039.1	0.0		
	53993 / LY3993	Morwell (M2C)		Stratford Zone 1	461724.5	5768497.0	323.7		
	54336 / LY4336	Morwell (M2C)		Stratford Zone 1	462969.7	5767990.0	61.0		
	54346 / LY4346	Morwell (M2C)		Stratford Zone 1	462174.8	5768825.0	318.7		
	54421 / LY4421	Morwell (M2C)		Stratford Zone 1	462927.9	5768788.0	347.5		
	54461 / LY4461	Morwell (M2C)		Stratford Zone 1	462831.3	5769027.4	102.9		
	54462 / LY4462	Morwell (M2C)		Stratford Zone 1	463053.8	5768500.4	341.1		
	54551 / LY4551	Morwell (M2C)		Stratford Zone 1	462557.2	5769080.4	95.0		
	54667 / LY4667	Morwell (M2C)		Stratford Zone 1	461254.0	5768454.2	328.6		
	54808 / LY4808	Morwell (M2C)		Stratford Zone 1	462921.2	5769460.5	73.5		
	54665 / LY4665	Morwell (M2C)		Stratford Zone 1	462978.1	5769646.5	633.9		
	54985 / LY4985	Morwell (M2C)		Stratford Zone 1	463332.8	5769433.4	319.4	2,945.2	
	53752 / LY3752	Traralgon Fm		Stratford Zone 1	460941.2	5768218.6	1,840.8		
	53980 / LY3980	Traralgon Fm		Stratford Zone 1	461874.5	5768559.4	2,885.0		
	54184 / LY4184	Traralgon Fm		Stratford Zone 1	461458.8	5768384.8	2,560.5		
	54395 / LY4395	Traralgon Fm		Stratford Zone 1	462452.9	5767783.8	574.2		
	55000 / LY5000	Traralgon Fm		Stratford Zone 1	462591.0	5769241.8	1,038.7	8,899.2	
	Loy Yang Total Annual Flow (ML)							11,844.3	
Yallourn									
	25056 / N5056	Morwell (M1A)		Rosedale Zone 1	445128.3	5773114.5	391.4		
	26899 / N6899	Morwell (M1A)		Stratford Zone 1	445008.0	5772825.6	834.6		
	YNOC	Morwell (M1A)		Rosedale Zone 1	see YNOC Table		48.3		
	Yallourn Total Annual Flow (ML)							1,274.2	
TOTAL ANNUAL EXTRACTION 2020/2021 (ML)							24,929.1		

Table of Yallourn North Open Cut (YNOC) M1B pumping bore locations collectively metered.

Parish Code	Bore Number	MGA55 East	MGA55 North	SEC East	SEC North
TE	1941	445336.9	5776109.3	398759.7	269519.3
TE	1940	445297.8	5776094.1	398720.4	269504.5
TE	1939	445257.0	5776079.0	398680.0	269490.0
TE	1938	445217.3	5776073.8	398639.7	269485.0
TE	1937	445176.5	5776067.2	398598.7	269478.8
TE	1936	445138.5	5776060.7	398560.7	269472.8
TE	1935	445099.2	5776056.4	398521.4	269468.9
TE	1963	444773.8	5775872.0	398193.9	269288.0
TE	1959	444750.0	5775785.6	398169.1	269201.8
TE	1957	444739.0	5775749.7	398157.7	269166.0
TE	1997	444762.2	5775828.6	398181.7	269244.7
TE	1986	444902.2	5775631.5	398319.7	269046.0
TE	1980	444691.6	5775576.2	398108.4	268993.0
TE	1979	444649.2	5775530.4	398065.5	268947.6
TE	1985	444863.4	5775641.7	398281.0	269056.6
TE	1984	444830.3	5775646.7	398247.9	269062.0
TE	1983	444793.5	5775653.7	398211.2	269069.4
TE	1982	444753.7	5775660.0	398171.4	269076.1
TE	2025	444580.1	5775461.2	397995.6	268879.1



Hazelwood Mine Pump Bore Location Plan



Loy Yang Mine Pump Bore Location Plan



Yallourn Mine Pump Bore Location Plan

Appendix D

**Latrobe Valley Groundwater Monitoring
Bore Details**

LocCode	MGA E	MGA N	Install No	(mAHD)	from (m)	(m)	(mAHD)	Monitoring Unit	RWL (mAHD)	RWL date	Comments	Licence	Monitored	Key Bore
100093	497011.0	5770396.8	s01	129.5	116	122.5		Traralgon Fm	17.60	07-Jan-10	Standpipe sealed with VWPs	Y	Sealed	Y
100093	497011.0	5770396.8	v01	129.5			7	Traralgon Fm	9.76	05-Mar-21		Y	East Run	Y
100093	497011.0	5770396.8	v02	129.5			9.5	Traralgon Fm	10.70	05-Mar-21	v02 reading to be checked	Y	East Run	Y
100094	498503.5	5768810.4	s01	142	196.5	211.5		Traralgon Fm	16.30	23-Jul-08	Same site as 100096 (duplication)	Y	East Run	
100096	498489.7	5768824.9	s01	143.7	196.5	202.5		Traralgon Fm	3.16	05-Mar-21		Y	East Run	
100097	496466.3	5766494.2	s01	119.8	228	234		Traralgon Fm	54.33	21-Aug-13	Track Access Issue	Y	East Run	
10942	451444.5	5773871.4	s01	39				M2/TFAS	-52.10	07-Oct-21	APM - VWP installed 2011	Y	Morwell Run	Y
10942	451444.5	5773871.4	v01	39			-455	M2/TFAS	-83.15	07-Oct-21	APM- assumed fully slotted standpipe	Y	Morwell Run	
10942	451444.5	5773871.4	v02	39			-445	M2/TFAS	-69.47	07-Oct-21	APM- assumed fully slotted standpipe	Y	Morwell Run	Y
110032	463905.4	5782024.7	s01		413	419		Morwell Fm	36.75	29-Jul-20	Headworks damaged requires rehab	Y	East Run	
110034	468355.4	5784414.3	s01	52.1	398	404.5		Traralgon Fm	30.10	07-Jan-10	Standpipe sealed with VWPs 2012	Y	Sealed	Y
110034	468355.4	5784414.3	v01	52.1			-347.9	Traralgon Fm	-37.46	05-Mar-21	Reclassified TR Fm 2013	Y	East Run	
110034	468355.4	5784414.3	v02	52.1			-350.9	Traralgon Fm	-28.02	05-Mar-21	Reclassified TR Fm 2013	Y	East Run	Y
110036	471670.9	5779112.6	s01	24.5	701.3	704.3		Traralgon Fm	-19.14	05-Mar-21		Y	East Run	
110037	457677.3	5777000.9	s01	36.7	564.5	578		Traralgon Fm	28.00	21-Aug-12	Sealed 2013	Y	Sealed	
110038	462421.7	5778300.2	s01	31.4	529.5	533		Traralgon Fm	32.20	20-Jun-06	Sealed	Y	Sealed	
110040	460998.3	5777499.3	s01	28.2	317	323.5		Morwell Fm	26.70	08-Dec-99	Sealed 2002 blocked 103m unable to clear	Y	Sealed	
110042	465511.3	5778539.9	s01	32.1	585.5	595		Traralgon Fm	21.70	05-Jan-11	Private property - not accessible	Y	East Run	
110043	472800.4	5781790.5	s01	29	604	617		Traralgon Fm	23.12	05-Mar-21		Y	East Run	
120141	442281.4	5756983.2	p01	69			-189.3	Morwell Fm	67.20	24-Nov-93	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p02	69			-143.8	Morwell Fm	66.60	14-Jun-94	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p03	69			-105	Morwell Fm	63.90	24-Nov-93	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p04	69			-7.5	Morwell Fm	66.00	24-Oct-94	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p05	69			12	Morwell Fm	68.00	24-Oct-94	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p06	69			31.5	Morwell Fm	68.20	24-Oct-94	Never monitored by RMC	Y	Not monitored	
120122	442874.1	5756892.9	s01	70.5	280	299.5		Traralgon Fm	3.38	04-Jul-13	SWL > 100m VWP to be installed	Y	Morwell Run	
120135	440780.3	5756663.4	s01	70.6	320	323		Traralgon Fm	55.14	01-Mar-21	Re-classified to Tr Fm 2013	Y	Morwell Run	
120152	445568.4	5756682.7	s01	93.5	632.4	638.4		Traralgon Fm	35.65	01-Mar-21		Y	Morwell Run	
12034	445085.9	5767863.0	s01	54.3	297	301.9		Morwell Fm	-50.9	27-Jun-79	Never monitored by RMC	Y	Not monitored	
12390	452215.4	5771375.9	v04	44.7	556	561		Morwell Fm	-30.1	30-Nov-88	Never monitored by RMC	Y	Not monitored	
12758	445825.7	5769669.5	s01	66.8	250.5	263.5		Morwell Fm	-11.00	21-Aug-89	Never monitored by RMC	Y	Not monitored	
130165	470693.0	5766298.2	s01	113.5	254.2	257.2		Morwell Fm	67.60	21-Jun-02	Standpipe sealed with VWPs 2003	Y	Sealed	Y
130165	470693.0	5766298.2	v01	113.5			-140.7	Morwell Fm	0.20	05-Mar-21		Y	East Run	Y
130167	470881.5	5761012.9	s01	216.1	173.5	175.4		Traralgon Fm	77.70	08-Dec-03	Standpipe sealed with VWPs 2005	Y	Sealed	Y
130167	470881.5	5761012.9	v01	216.1			41.3	Traralgon Fm	64.38	05-Mar-21		Y	East Run	Y
130167	470881.5	5761012.9	v02	216.1			42.5	Traralgon Fm	65.52	05-Mar-21		Y	East Run	
130176	470627.8	5766257.6	s01	113.8	516	517		Traralgon Fm	35.70	15-Jun-04	Sealed 2004	Y	Sealed	
130183	467922.8	5763555.1	s01	126.7	420	423		Traralgon Fm	27.5	02-Dec-95	Never monitored by RMC Sealed 1995	Y	Not monitored	
130198	470244.8	5764670.2	s01	156.6	70	73		Morwell Fm	84.34	05-Mar-21		Y	East Run	
130205	470168.9	5764329.7	s01	158.5	158.5	170.5		Traralgon Fm	101.86	05-Mar-21	Anomalous trend	Y	East Run	
130212	468186.6	5760775.6	s01	172.3	157	163		Traralgon Fm	130.40	05-Mar-21		Y	East Run	
130213	469298.9	5766777.0	s01	82.42	16	18		Morwell Fm	76.53	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
130214	469183.9	5766777.0	v01	94.99			-20.11	Morwell Fm	62.33	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
130215	469436.6	5766570.7	s01	88.35	6	13		Haunted Hills Fm			Flynn Bore private property	N	East Run	
130217	469106.7	5766623.3	v01	83.41			-315.59	Traralgon Fm			Flynn Bore private property	N	East Run	
130217	469106.7	5766623.3	v02	83.41			-176.59	Morwell Fm			Flynn Bore private property	N	East Run	

130218	468246.2	5765483.7	v01	92.11				-25.89	Morwell Fm				Flynn Bore private property	N	East Run	
130219	469971.3	5765798.0	s01	111.76	21	27			Haunted Hills Fm	96.52	05-Mar-21		Flynn Bore private property	N	East Run	
130220	469599.7	5765283.3	s01	110.42	19	21			Haunted Hills Fm	97.27	05-Mar-21		Flynn Bore Road Reserve	N	East Run	
130220	469599.7	5765283.3	v01	110.42				-120.58	Morwell Fm	failed	05-Mar-21		Flynn Bore Road Reserve	N	East Run	
130220	469599.7	5765283.3	v02	110.42				-14.58	Morwell Fm	85.87	05-Mar-21		Flynn Bore Road Reserve	N	East Run	
130220	469599.7	5765283.3	v03	110.42				45.42	Yallourn Fm	95.66	05-Mar-21		Flynn Bore Road Reserve	N	East Run	
13054	451119.4	5774301.1	s01	50.3	324.5	344			Morwell Fm	11.51	13-Feb-13		Headworks damaged required rehab	Y	Morwell Run	
13101	450742.9	5767976.3	s01	63	606	613			Traralgon Fm	49.50	05-Jul-02		Sealed 2002 over screen, sealing completed 2014.	Y	Sealed	
13190	452215.4	5771375.9	v04	44.7				-340.3	Morwell Fm	-26.13	16-Jun-10		Instrument failed	Y	Morwell Run	
13190	452215.4	5771375.9	v05	44.7				-326.1	Morwell Fm	-49.55	01-Mar-21			Y	Morwell Run	Y
13190	452215.4	5771375.9	v06	44.7				-313.5	Morwell Fm	-3.92	26-Dec-01		Instrument failed	Y	Morwell Run	
13190	452215.4	5771375.9	v07	44.7				-300.8	Morwell Fm	-25.19	08-Jan-09		Instrument failed	Y	Morwell Run	
13190	452215.4	5771375.9	v08	44.7				-282.5	Morwell Fm	-30.45	01-Mar-21			Y	Morwell Run	Y
13190	452215.4	5771375.9	v09	44.7				-265.3	Morwell Fm	-35.02	01-Mar-21			Y	Morwell Run	
13282	448189.9	5770169.3	v02	75.3				-168.9	Morwell Fm	-27.62	21-Jun-03		Instrument failed	Y	Morwell Run	
13282	448189.9	5770169.3	v04	75.3				-134.9	Morwell Fm	-29.68	10-Feb-20		Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v05	75.3				-105.4	Morwell Fm	-28.22	10-Feb-20		Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v07	75.3				-76.4	Morwell Fm	-25.68	10-Feb-20		Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v09	75.3				-34.4	Morwell Fm	7.26	10-Feb-20		Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v10	75.3				-9.4	Yallourn Fm	11.71	10-Feb-20		Private land access issues	Y	Morwell Run	
180177	492116.9	5771969.3	s01	137.5	172.5	179			Traralgon Fm	15.58	05-Mar-21			Y	East Run	Y
180188	492128.1	5771938.6	s01	138.6	196.9	199.1			Traralgon Fm	15.62	05-Mar-21			Y	East Run	
180189	492131.4	5771919.8	s01	139	196	202			Traralgon Fm	15.66	05-Mar-21			Y	East Run	
180196	489765.4	5769576.1	s01	165.9	312.5	319			Traralgon Fm	89.80	05-Mar-21			Y	East Run	
180204	490094.0	5776111.6	s01	16	298	304.5			Morwell Fm	15.62	05-Mar-21			Y	East Run	
180207	487919.4	5768264.2	s01	164	351.4	354.5			Traralgon Fm	93.90	05-Mar-21			Y	East Run	
180220	492038.8	5775159.9	s01	37.4	218	301.5			Traralgon Fm	23.60	05-Mar-21			Y	East Run	
180221	489155.2	5769764.7	s01	160.1	301	311			Traralgon Fm	88.79	05-Mar-21			Y	East Run	
190046	508487.9	5772005.6	s01	62.7	190.2	196.2			Traralgon Fm	22.40	05-Mar-21			Y	East Run	
190054	510717.2	5774505.0	s01	49.6	205	211.5			Traralgon Fm	19.15	05-Mar-21		Headworks damaged requires rehab	N	East Run	Y
190066	518206.8	5775571.2	s01	5.2	634	801			Gippsland Lst	5.31	05-Mar-21			N	East Run	Y
210051	488524.7	5759788.3	s01	194.2	329.4	335.2			Traralgon Fm	11.11	29-Aug-11		Access issues SWL>200 m required VWP	Y	East Run	Y
220196	479470.1	5765095.9	s01	133.8	349.6	369.4			Traralgon Fm	52.20	14-Dec-01		Sealed May 2013 VWP installed	Y	Sealed	
220196	479470.1	5765095.9	v01	133.8				-229.2	Traralgon Fm	42.75	05-Mar-21			Y	East Run	
220196	479470.1	5765095.9	v02	133.8				-221.2	Traralgon Fm	20.81	05-Mar-21			Y	East Run	
220197	479600.4	5765285.3	s01	133.7	339	340.5			Traralgon Fm	111.70	21-Aug-12		Sealed in 2013 same site as 220196	Y	Sealed	
22491	442623.8	5764678.1	s01	58.2	87.5	89			Morwell Fm	26.20	20-Jan-11		On mine batters removed from network	Y	Engie to seal	
230034	433441.0	5777417.5	s01	67.4	52	55			Traralgon Fm	56.97	11-May-21			Y	Morwell Run	
230043	430259.2	5776387.4	s01	67.3	144	156			Traralgon Fm	68.30	11-May-21			Y	Morwell Run	
230049	429607.6	5774059.8	s01	56.3	210	219			Traralgon Fm	72.90	11-May-21			Y	Morwell Run	
230055	426835.7	5773342.0	s01	58	176	180			Traralgon Fm	73.70	11-May-21			Y	Morwell Run	
23263	441386.9	5765022.4	s01	70.73	84.6	91.5			Morwell Fm	12.50	01-Mar-21			Y	Morwell Run	Y
23270	440767.3	5764580.0	s01	65.8	45.7	46.3			Morwell Fm	55.00	01-Mar-21			N	Morwell Run	
23271	442220.9	5765473.3	s01	61	112.5	113.1			Morwell Fm	42.57	29-Jan-20		Blocked inside mining lease & not a licenced bore. Engie drilled replacement bore 62874.	N	Engie to seal	
23288	440848.0	5763326.0	s01	69.8	46.9	48.5			Morwell Fm	44.47	01-Mar-21			Y	Morwell Run	

23369	441613.4	5767774.1	S01	78.2	143	144		Morwell Fm	2.80	15-Jun-94	Sealed 2002 VWP installed	Y	Sealed	
23369	441613.4	5767774.1	v01	78.2			-58.8	Morwell Fm	-9.31	01-Mar-21		Y	Morwell Run	
23567	440054.7	5767522.5	s01	138.9	124	130		M2/TFAS	88.56	01-Mar-21		Y	Morwell Run	
23570	441929.4	5763857.5	s01	59.8	181	187		M2/TFAS	-21.77	19-Jul-21	Monitored by Engie	Y	Engie	
23607	439447.4	5766736.9	s01	135.5	83.6	90.1		M2/TFAS	54.24	16-Jun-10	Sealed 2011 VWPs installed	Y	Sealed	Y
23607	439447.4	5766736.9	v01	135.5			44.2	M2/TFAS	44.72	01-Mar-21		Y	Morwell Run	
23607	439447.4	5766736.9	v02	135.5			48.2	M2/TFAS	46.73	01-Mar-21		Y	Morwell Run	Y
23615	439575.6	5765145.0	s01	89.4	59.1	66.1		M2/TFAS	63.72	01-Mar-21		Y	Morwell Run	
23694	440917.3	5763243.8	s01	69.9	65.6	66.6		M2/TFAS	59.78	01-Mar-21		Y	Morwell Run	
23726	438813.6	5773652.1	s01	92.7	185	194		Traralgon Fm	94.73	11-May-21		Y	Morwell Run	
23780	441612.2	5767762.3	s01	78.2	187.5	194		M2/TFAS	55.20	06-Jan-98	Sealed 2002 VWPs installed	Y	Sealed	
23780	441612.2	5767762.3	v01	78.2			-95.8	M2/TFAS	-8.13	01-Mar-21		Y	Morwell Run	
23787	438263.2	5774053.7	s01	81.8	209	215		Morwell Fm	84.95	11-May-21		Y	Morwell Run	
23788	436212.4	5775853.2	s01	55.4	96.5	98		Traralgon Fm	56.20	07-May-07	Valve siezed cant read pressure	Y	Morwell Run	
23789	437196.5	5775011.0	s01	72	158.5	164.5		Traralgon Fm	79.93	11-May-21		Y	Morwell Run	
23799	439786.3	5772688.9	s01	155.1	211.5	214.5		Traralgon Fm	85.64	08-Jan-08	Sealed 2008 VWPs installed	Y	Sealed	
23799	439786.3	5772688.9	v01	155.1			-56.9	Traralgon Fm	81.66	11-May-21		Y	Morwell Run	
23799	439786.3	5772688.9	v02	155.1			-57.9	Traralgon Fm	84.64	11-May-21		Y	Morwell Run	
240047	479110.7	5778949.4	s01	44.1	426	439		Morwell Fm	29.50	05-Jan-11	Access issues	Y	East Run	
240051	474520.0	5779237.0	s01	18.8	655.6	675.2		Traralgon Fm			Never monitored by RMC	N	Not monitored	
240052	482955.2	5786445.5	s01	25.4	568.8	577.8		Traralgon Fm	-3.47	05-Mar-21		Y	East Run	
24558	441290.8	5768349.6	s01	79.2	164	170		Morwell Fm	47.00	11-Dec-90	Never monitored by RMC	Y	Not monitored	
24651	441552.4	5768153.6	s01	74.5	170	173		Morwell Fm	44.40	06-Jan-98	Never monitored by RMC	Y	Not monitored	
24652	441638.8	5769050.8	s01	80.2	192.5	195.5		Morwell Fm	45.60	19-May-92	Never monitored by RMC	Y	Not monitored	
25952	441054.3	5766503.8	v01	91.15			-41.85	Morwell Fm	30.86	01-Mar-21	Exergen bore Roadside reserve	N	Morwell Run	
25952	441054.3	5766503.8	v02	91.15			-16.45	Morwell Fm	37.89	01-May-21	Exergen bore Roadside reserve	N	Morwell Run	
26091	447736.0	5772597.5	s01	100.27	46	49		Haunted Hills Fm	54.57	02-Jun-21	Monitored by Yallourn (13282 replacement)	N	Yallourn	
31694	448305.2	5775545.2	s01	36.2	217.1	220.1		Morwell Fm	7.70	05-Mar-21	Bore assessed 2018 added to run	N	Morwell Run	
40195	453831.3	5776637.3	s01	41.1	449.5	452.5		Traralgon Fm	6.42	05-Mar-21		Y	East Run	
40196	455456.5	5775945.0	s01	35	331	334		Morwell Fm	31.98	05-Mar-21		Y	East Run	
440056	486758.4	5780556.0	s01	40.2	392	401.5		Morwell Fm	21.54	05-Mar-21		Y	East Run	Y
440058	484197.4	5779524.9	s01	26.5	526	535		M2/TFAS	8.84	21-Jan-13	Sealed 2013 on new highway alignment	Y	Sealed	
440341	490397.2	5787973.0	s01	23	660	666		Traralgon Fm	4.47	05-Mar-21		Y	East Run	Y
51967	471050.7	5770767.4	s01	71.1	569.5	591.5		Traralgon Fm	42.56	19-Feb-18	Blocked requires rehab.	Y	East Run	
51979	471175.2	5770762.1	s01	70.5	374	380.5		Morwell Fm	48.48	05-Mar-21		Y	East Run	
52179	459858.2	5760304.2	s02	101.4	214	230		Basement			Never monitored by RMC	Y	Not monitored	
52204	465439.7	5763181.5	s01	172.8	357	360		Traralgon Fm	132.38	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
52268	464326.4	5773271.2	s01	46.9	428.9	431.9		Morwell Fm	26.42	05-Mar-21		N	East Run	
52269	471767.9	5775143.3	s01	39.1	367.3	376.8		Morwell Fm	32.00	05-Mar-21		N	East Run	
52310	469795.1	5772701.9	s01	61.4	320	333		Morwell Fm	33.60	05-Mar-21		Y	East Run	
52472	467070.0	5769821.5	s01	56.4	466.1	479		Traralgon Fm	39.47	05-Mar-21	Reclassifies TR intraseam not MFAS 2013	Y	East Run	
52477	460554.2	5763190.8	s01	87.1	171	177		Traralgon Fm	13.40	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
52594	463044.0	5760680.9	s01	194.3	110.7	123.8		Traralgon Fm	116.80	25-Sep-95	Sealed, never read by RMC	Y	Previously LY	
52676	464353.9	5773509.6	s01	44.9	672.5	692		Traralgon Fm	24.23	05-Mar-21		Y	East Run	
52678	469793.5	5772693.0	s01	61.6	694	694		Basement	10.18	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v02	70.4			-359.6	Morwell Fm	-4.90	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v03	70.4			-334.9	Morwell Fm	-4.93	05-Mar-21		Y	East Run	

52809	471249.1	5770747.5	v04	70.4			-322.2	Morwell Fm	-17.54	05-Mar-21		Y	East Run	Y
52809	471249.1	5770747.5	v05	70.4			-279.7	Morwell Fm	0.38	05-Mar-21				
52809	471249.1	5770747.5	v06	70.4			-249.5	Morwell Fm	13.41	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v07	70.4			-219.3	Morwell Fm	3.55	25-Jun-10	Instrument failure	Y	East Run	
52809	471249.1	5770747.5	v08	70.4			-185.3	Morwell Fm	19.17	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v09	70.4			-174.6	Morwell Fm	24.58	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v10	70.4			-160.4	Morwell Fm	21.25	05-Mar-21		Y	East Run	Y
52809	471249.1	5770747.5	v12	70.4			-109.7	Yallourn Fm	34.60	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v13	70.4			-79.5	Yallourn Fm	34.53	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v14	70.4			-54.8	Yallourn Fm	38.02	05-Mar-21		Y	East Run	
52810	471265.2	5770744.6	v04	70.4			-524.9	Traralgon Fm	-107.51	09-Aug-17	Headworks damage required rehab	Y	East Run	
52810	471265.2	5770744.6	v05	70.4			-516.8	Traralgon Fm	-99.53	29-Dec-08	Instrument failure	Y	East Run	
52810	471265.2	5770744.6	v07	70.4			-473.3	Traralgon Fm	-93.35	11-Aug-16	Headworks damage required rehab	Y	East Run	
52810	471265.2	5770744.6	v09	70.4			-409.8	Morwell Fm	-36.28	09-Aug-17	Headworks damage required rehab	Y	East Run	Y
52810	471265.2	5770744.6	v10	70.4			-387.8	Morwell Fm	-37.59	09-Aug-17	Headworks damage required rehab	Y	East Run	Y
52883	471182.1	5770759.2	v01	70.6			0.8	Haunted Hills Fm	46.33	05-Mar-21		Y	East Run	Y
52883	471182.1	5770759.2	v02	70.6			34.6	Haunted Hills Fm	48.58	05-Mar-21		Y	East Run	
52984	466789.0	5767733.2	s01	84.3	350	353		Traralgon Fm	35.10	27-Mar-96	Never monitored by RMC	Y	Previously LY	
52985	466782.4	5767736.5	s01	84.4	98	101		Morwell Fm	66.50	27-Mar-96	Never monitored by RMC	Y	Previously LY	
530024	471521.0	5792812.6	s01	60.2	234	240		Morwell Fm	13.48	05-Mar-21		Y	East Run	
530025	467896.9	5787491.0	s01	68	407.2	413		Traralgon Fm	-34.75	05-Mar-21	Re-classified to TFAS 2013	Y	East Run	
53038	462346.2	5769471.2	s01	74.6				Morwell Fm	33.60	27-Oct-96	Never monitored by RMC	Y	Not monitored	
53055	459791.9	5768182.4	s01	54.2	384.5	387.5		Morwell Fm	-36.10	27-Aug-04	Previously monitored by Loy Yang	Y	Previously LY	
53075	463305.9	5768539.9	v01	66.6			-111.2	Morwell Fm	-26.80	07-Jan-02	Previously monitored by Loy Yang	Y	Previously LY	
53075	463305.9	5768539.9	v02	66.6			-161.2	Morwell Fm	10.20	07-Aug-00	Previously monitored by Loy Yang	Y	Previously LY	
53118	462511.7	5770590.3	v01	85.8			-456.8	Traralgon Fm	-30.90	25-Sep-95	Instrument failure	Y	Not monitored	
53118	462511.7	5770590.3	v05	85.8			-368.6	Morwell Fm	-0.40	01-Oct-98	Instrument failure	Y	Not monitored	
53118	462511.7	5770590.3	v09	85.8			-321.3	Morwell Fm	-33.30	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v13	85.8			-250.9	Morwell Fm	48.95	01-Oct-19	Reading not stable	Y	East Run	
53118	462511.7	5770590.3	v14	85.8			-243.2	Morwell Fm	28.45	22-Aug-18	Instrument failure	Y	East Run	
53118	462511.7	5770590.3	v15	85.8			-217.4	Morwell Fm	-24.86	04-Feb-16	Instrument failure	Y	East Run	
53118	462511.7	5770590.3	v16	85.8			-203.2	Morwell Fm	-11.29	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v17	85.8			-177.3	Morwell Fm	31.03	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v19	85.8			-122.6	Morwell Fm	21.62	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v20	85.8			-93.2	Morwell Fm	-2.37	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v02	85.8			-35.8	Yallourn Fm	40.56	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v03	85.8			-32.6	Yallourn Fm	41.41	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v04	85.8			-24.9	Yallourn Fm	44.00	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v05	85.8			-4.1	Yallourn Fm	46.16	05-Mar-21		Y	East Run	
53298	459795.1	5761947.1	v01	83.8			-141	Basement	56.74	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53298	459795.1	5761947.1	v02	83.8			-100.6	Basement	58.69	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53298	459795.1	5761947.1	v03	83.8			-86.3	Traralgon Fm	62.66	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53298	459795.1	5761947.1	v04	83.8			-54.4	Traralgon Fm	70.04	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v01	83.8			-26.2	Traralgon Fm	69.40	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v02	83.8			4.1	Traralgon Fm	71.79	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v03	83.8			31.5	Traralgon Fm	74.44	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	

53299	459796.7	5761951.1	v04	83.8			56.3	Haunted Hills Fm	76.16	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53352	460334.1	5764856.4	v01	69.3			-348.2	Basement	-5.70	13-Oct-16	Cables checked not reading remove	Y	Previously LY	
53352	460334.1	5764856.4	v02	69.3			-313.2	Basement	-10.40	13-Oct-16	Cables checked not reading remove	y	Previously LY	
53353	460327.5	5764845.3	v01	69.3			-248.6	Traralgon Fm Volc	-31.83	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v02	69.3			-210.7	Traralgon Fm Volc	-34.87	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v03	69.3			-166.7	Traralgon Fm	6.05	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v04	69.3			-144.4	Traralgon Fm	9.82	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v05	69.3			-112.1	Traralgon Fm	10.10	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v06	69.3			-68.9	Morwell Fm	23.00	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
54348	463942.8	5761977.0	v01	218.49			49	Traralgon Fm	52.63	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	East Run	
570011	499185.7	5789589.7	s01	12.4	642	648		Morwell Fm	-1.31	21-Jul-21		N	East Run	Y
61095	443701.4	5763485.8	s01	59.79	99.6	100.8		Traralgon Fm	1.65	21-Jul-21	Monitored by Engie	Y	Engie	
61320	446644.6	5761841.5	s01	83.9	427.9	434		Traralgon Fm	67.35	01-Mar-21		Y	Morwell Run	
61333	450499.9	5764468.2	s01	81	587.3	593.6		Traralgon Fm	37.78	03-Aug-20		Y	Morwell Run	
61348	450065.1	5762455.6	s01	105.4	550.4	557.4		Traralgon Fm	41.15	25-Sep-19	Trend anomalous required rehab	Y	Morwell Run	
61502	443906.9	5760017.2	s01	73.6	339	340.4		Morwell Fm	67.25	06-Jan-15	Sealed May 2015 VVPs installed	Y	Morwell Run	
61502	443906.9	5760017.2	v01	73.6			-265.4	Morwell Fm	-26.40	01-Mar-21		Y	Morwell Run	
61502	443906.9	5760017.2	v02	73.6			-266.1	Morwell Fm	-28.80	01-Mar-21		Y	Morwell Run	
61631	450491.8	5764491.9	v01	80.7			-213.7	Morwell Fm	22.00	08-Jan-97	Instrument failed not monitored by RMC	Y	Morwell Run	
61631	450491.8	5764491.9	v02	80.7			-201	Morwell Fm	17.81	03-Aug-20		Y	Morwell Run	
61631	450491.8	5764491.9	v03	80.7			-191.7	Morwell Fm	13.00	21-Dec-11	Instrument failure	Y	Morwell Run	
61631	450491.8	5764491.9	v04	80.7			-181.5	Morwell Fm	13.60	03-Aug-20		Y	Morwell Run	
61631	450491.8	5764491.9	v05	80.7			-171.3	Morwell Fm		03-Aug-20	Instrument failure reading unreliable		Morwell Run	
61631	450491.8	5764491.9	v06	80.7			-154.1	Morwell Fm		03-Aug-20	Instrument failure reading unreliable		Morwell Run	
61632	450490.0	5764476.7	s01	81	635.5	647.5		Traralgon Fm	52.58	03-Aug-20		Y	Morwell Run	
61691	447254.1	5758810.8	v02	96.8			-289.6	Traralgon Fm	-65.18	01-Mar-21		Y	Morwell Run	
61691	447254.1	5758810.8	v03	96.8			-264.9	Traralgon Fm	-60.30	01-Mar-21		Y	Morwell Run	
61691	447254.1	5758810.8	v04	96.8			-204.8	Morwell Fm	-24.49	16-Feb-17	Instrument failure	Y	Morwell Run	
61719	450024.6	5760055.4	s01	105.7	306	309		Traralgon Fm	71.11	01-Mar-21		Y	Morwell Run	
61726	448896.5	5757382.5	s01	155.5	321	347		Traralgon Fm	17.20	05-Aug-12	requires rehab	Y	Morwell Run	
62894	395650.22	258930.303	v02	58.43			-56.06	Morwell Fm	-37.23	29-Jul-21	Monitored by Engie (23271 replacement)	N	Engie	
80256	456778.7	5763769.3	s01	161.1	382	383		Traralgon Fm	66.30	23-Jul-01	Sealed 2002 blocked 113m unable to clear	N	Sealed	
80426	453595.2	5763924.2	s01	102.6	154	157		Morwell Fm	82.90	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	Loy Yang	
80433	459785.8	5773043.8	s01	34.5	340	343		Morwell Fm	26.36	05-Mar-21		N	East Run	
80440	455303.3	5765748.0	s01	97.5	164.5	170.5		Morwell Fm	77.00	29-Jul-20		N	East Run	
80442	458533.5	5760753.6	s01	129.2	142.5	149		Traralgon Fm	113.40	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	Loy Yang	
80445	458118.8	5769979.4	v03	84.4			-440.6	Traralgon Fm	-56.11	05-Mar-21		Y	East Run	
80445	458118.8	5769979.4	v04	84.4			-415.9	Traralgon Fm	-119.63	21-Jan-14	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v05	84.4			-395.2	Morwell Fm	-75.03	05-Jan-15	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v06	84.4			579.9	Morwell Fm	-85.64	07-Jan-10	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v08	84.4			-309.6	Morwell Fm	-30.14	05-Jan-11	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v09	84.4			-266.4	Morwell Fm	-19.49	05-Mar-21		Y	East Run	Y
80445	458118.8	5769979.4	v10	84.4			-239.2	Morwell Fm	-18.62	05-Mar-21		Y	East Run	Y
80454	455281.7	5765750.2	s01	96.7	551	557.5		Traralgon Fm	74.50	15-Dec-05	Sealed 2005 blocked 156m unable to clear	N	Sealed	
80466	458165.1	5770368.5	s01	78.4	696	702		Traralgon Fm	-14.50	19-Jun-98	Never monitored by RMC	N	Not monitored	
80485	457613.5	5773973.1	s01	46.8	614	617		Traralgon Fm	-35.20	15-Jun-04	Sealed 2004 - house built on land	N	Sealed	

80487	452231.7	5761418.1	s01	129	280	286		Morwell Fm	97.38	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	Loy Yang	
80489	458090.1	5766715.2	v02	124			-465.5	Traralgon Fm	-73.39	05-Mar-21		Y	East Run	
80489	458090.1	5766715.2	v03	124			-452.6	Traralgon Fm	-78.50	05-Jan-15	Instrument failed	Y	East Run	
80489	458090.1	5766715.2	v04	124			-444	Traralgon Fm	-52.60	08-Apr-99	Instrument failed data unreliable	Y	East Run	
80489	458090.1	5766715.2	v05	124			-408	Traralgon Fm	-81.47	05-Mar-21		Y	East Run	
80489	458090.1	5766715.2	v06	124			-393.7	Traralgon Fm	-73.70	05-Mar-21		Y	East Run	
80490	458637.0	5766441.2	v01	80.2			-261.2	Traralgon Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v03	80.2			-249.5	Traralgon Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v04	80.2			-240.7	Traralgon Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v05	80.2			-206.9	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v06	80.2			-176.4	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v07	80.2			-149.1	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v08	80.2			-134.4	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v09	80.2			-109	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80491	460315.0	5768771.6	v02	49.5			-474.9	Traralgon Fm	-51.40	04-Jan-01	Instrument failed	Y	Not monitored	
80491	460315.0	5768771.6	v06	49.5			-367	Morwell Fm	-30.20	13-Oct-03	Instrument failed / access	Y	Not monitored	
80491	460315.0	5768771.6	v07	49.5			-349.7	Morwell Fm	13.80	27-Sep-01	Instrument failed	Y	Not monitored	
80491	460315.0	5768771.6	v08	49.5			-315.8	Morwell Fm	-19.50	27-Sep-01	Instrument failed	Y	Not monitored	
80491	460315.0	5768771.6	v09	49.5			-262.3	Morwell Fm	13.70	13-Oct-03	Instrument failed / access	Y	Not monitored	
80491	460315.0	5768771.6	v11	49.5			-74.8	Yallourn Fm	43.80	13-Oct-03	Instrument failed / access	Y	Not monitored	
80491	460315.0	5768771.6	v12	49.5			-32.3	Yallourn Fm	40.00	13-Oct-03	Instrument failed / access	Y	Not monitored	
80493	454046.4	5769293.1	v01	59			-167.8	Yallourn Fm	33.16	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80493	454046.4	5769293.1	v02	59			-53	Hazelwood Fm	36.00	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80493	454046.4	5769293.1	v03	59			-21.1	Hazelwood Fm	40.35	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80493	454046.4	5769293.1	v04	59			12.8	Haunted Hills Fm	50.48	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80494	454046.4	5769293.1	v04	59			-576.4	Traralgon Fm	-57.70	19-Dec-95	Instrument failed	N	Not monitored	
80494	454046.4	5769293.1	v05	59			-564.6	Traralgon Fm	-68.50	07-Apr-95	Instrument failed	N	Not monitored	
80494	454046.4	5769293.1	v06	59			-536.6	Traralgon Fm	-68.90	19-Dec-95	Instrument failed	N	Not monitored	
80494	454046.4	5769293.1	v07	59			-500.3	Morwell Fm	-53.60	07-Apr-95	Instrument failed	N	Not monitored	
80494	454046.4	5769293.1	v08	59			-460	Morwell Fm	-72.00	02-Oct-00	Instrument failed	N	East Run	
80494	454046.4	5769293.1	v09	59			-405	Morwell Fm	-59.69	05-Dec-07	Cables checked not reading remove	N	East Run	
80494	454046.4	5769293.1	v11	59			-276	Morwell Fm	19.84	23-Jul-01	Instrument failed	N	East Run	
80495	458566.9	5762110.4	s01	113.4	236	239		Traralgon Fm	65.80	03-Jun-04	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v01	113.3			-19.5	Traralgon Fm	69.80	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v02	113.3			3.3	Traralgon Fm	68.70	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v03	113.3			30.7	Traralgon Fm	70.70	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v04	113.3			61.2	Haunted Hills Fm	66.90	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v05	113.3			86.8	Haunted Hills Fm	84.10	13-Oct-16	survey requested	Y	Loy Yang	
90323	485554.2	5772956.5	s01	113.2	211	214		Traralgon Fm	38.82	05-Mar-21		Y	East Run	
90324	476194.2	5775721.6	s01	31.4	377	384		Morwell Fm	16.14	05-Mar-21		Y	East Run	Y
90325	485793.3	5776929.8	s01	13.5	344.5	351		Morwell Fm	9.79	05-Mar-21		Y	East Run	
90330	472076.8	5768124.5	s01	74.3	478	481		Morwell Fm	8.42	05-Mar-21		Y	East Run	
90335	480482.3	5776174.6	s01	19.7	385	388		Morwell Fm	28	27-Jun-93	Never monitored by RMC	Y	Not monitored	
90339	475702.3	5772890.4	s01	38.6	632.5	652		Traralgon Fm	30.8	03-Jun-97	Never monitored by RMC	Y	Not monitored	
90340	476223.3	5775710.2	v01	31.3			-514.1	Traralgon Fm	-34.04	21-Jan-14	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v03	31.3			-465.1	Morwell Fm	-10.11	05-Jan-15	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v04	31.3			-444.4	Morwell Fm	-35.26	05-Mar-21		Y	East Run	

90340	476223.3	5775710.2	v05	31.3			-419.7	Morwell Fm	-24.23	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v06	31.3			-412	Morwell Fm	-24.77	21-Aug-13	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v07	31.3			-397.8	Morwell Fm	-0.23	15-Dec-05	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v08	31.3			-374.1	Morwell Fm	4.70	14-Dec-00	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v09	31.3			-333.7	Morwell Fm	3.40	20-Jul-00	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v10	31.3			-319.5	Morwell Fm	1.30	20-Jul-00	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v11	31.3			-305.3	Morwell Fm	-4.73	15-Jun-04	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v12	31.3			-269	Morwell Fm	-13.52	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v13	31.3			-244.3	Morwell Fm	9.50	06-Dec-96	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v14	31.3			-214.1	Morwell Fm	-1.94	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v16	31.3			-153.1	Morwell Fm	-4.81	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v17	31.3			-112.8	Yallourn Fm	-25.11	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v18	31.3			-98.6	Yallourn Fm	-20.89	05-Mar-21		Y	East Run	
90343	480883.6	5771120.1	s01	74.7	322	325		Traralgon Fm	32.31	04-Feb-16	Sealed 2019 Re-classified TFAS 2013	Y	East Run	
90344	476518.6	5769420.1	v01	61			-371.4	Traralgon Fm	31.72	05-Mar-21		N	East Run	
90344	476518.6	5769420.1	v02	61			-369.4	Traralgon Fm	32.71	05-Mar-21		N	East Run	
90344	476518.6	5769420.1	v03	61			-222.7	Morwell Fm	1.90	05-Mar-21		N	East Run	
90344	476518.6	5769420.1	v04	61			-113.3	Morwell Fm	9.98	05-Mar-21	Terminal box repaired	N	East Run	
90345	469501.6	5766920.1	s01	83.57	6	11		Haunted Hills Fm			Flynn Bores private property	N	Not monitored	
90345	469501.6	5766920.1	v01	83.57			-64.83	Morwell Fm			Flynn Bores private property	N	Not monitored	
920007	508838.5	5764253.6	s01	50.1	725	737		Traralgon Fm	5.60	05-Jan-11	Vandalised - required rehab	Y	East Run	Y

CURRENT REGIONAL MONITORING NETWORK

LocCode	MGA E	MGA N	Install No	(mAHD)	from (m)	(m)	(mAHD)	Monitoring Unit	RWL (mAHD)	RWL date	Comments	Licence	Monitored	Key Bore
100093	497011.0	5770396.8	v01	129.5			7	Traralgon Fm	9.76	05-Mar-21		Y	East Run	y
100093	497011.0	5770396.8	v02	129.5			9.5	Traralgon Fm	10.70	05-Mar-21		Y	East Run	Y
100094	498503.5	5768810.4	s01	142	196.5	211.5		Traralgon Fm	16.30	23-Jul-08	Same site as 100096 (duplication)	Y	East Run	
100096	498489.7	5768824.9	s01	143.7	196.5	202.5		Traralgon Fm	3.16	05-Mar-21		Y	East Run	
100097	496466.3	5766494.2	s01	119.8	228	234		Traralgon Fm	54.33	21-Aug-13	Track Access Issue	Y	East Run	
10942	451444.5	5773871.4	s01	39				M2/TFAS	-52.10	07-Oct-21	APM - VWP installed 2011	Y	Morwell Run	Y
10942	451444.5	5773871.4	v01	39			-455	M2/TFAS	-83.15	07-Oct-21	APM- assumed fully slotted standpipe	Y	Morwell Run	
10942	451444.5	5773871.4	v02	39			-445	M2/TFAS	-69.47	07-Oct-21	APM- assumed fully slotted standpipe	Y	Morwell Run	Y
110032	463905.4	5782024.7	s01		413	419		Morwell Fm	36.75	29-Jul-20	Headworks damaged 2021 requires rehab	Y	East Run	
110034	468355.4	5784414.3	v01	52.1			-347.9	Traralgon Fm	-37.46	05-Mar-21	Reclassified TR Fm 2013	Y	East Run	
110034	468355.4	5784414.3	v02	52.1			-350.9	Traralgon Fm	-28.02	05-Mar-21	Reclassified TR Fm 2013	Y	East Run	Y
110036	471670.9	5779112.6	s01	24.5	701.3	704.3		Traralgon Fm	-19.14	05-Mar-21		Y	East Run	
110042	465511.3	5778539.9	s01	32.1	585.5	595		Traralgon Fm	21.70	05-Jan-11	Private property - not accessible	Y	East Run	
110043	472800.4	5781790.5	s01	29	604	617		Traralgon Fm	23.12	05-Mar-21		Y	East Run	
120122	442874.1	5756892.9	s01	70.5	280	299.5		Traralgon Fm	3.38	04-Jul-13	Blocked requires rehab.	Y	Morwell Run	
120135	440780.3	5756663.4	s01	70.6	320	323		Traralgon Fm	55.14	01-Mar-21	Re-classified to Tr Fm 2013	Y	Morwell Run	
120152	445568.4	5756682.7	s01	93.5	632.4	638.4		Traralgon Fm	35.65	01-Mar-21		Y	Morwell Run	
130165	470693.0	5766298.2	v01	113.5			-140.7	Morwell Fm	0.20	05-Mar-21		Y	East Run	Y
130167	470881.5	5761012.9	v01	216.1			41.3	Traralgon Fm	64.38	05-Mar-21		Y	East Run	Y
130167	470881.5	5761012.9	v02	216.1			42.5	Traralgon Fm	65.52	05-Mar-21		Y	East Run	
130198	470244.8	5764670.2	s01	156.6	70	73		Morwell Fm	84.34	05-Mar-21		Y	East Run	
130205	470168.9	5764329.7	s01	158.5	158.5	170.5		Traralgon Fm	101.86	05-Mar-21		Y	East Run	
130212	468186.6	5760775.6	s01	172.3	157	163		Traralgon Fm	130.40	05-Mar-21		Y	East Run	
13054	451119.4	5774301.1	s01	50.3	324.5	344		Morwell Fm	11.51	13-Feb-13	Headworks damaged required rehab	Y	Morwell Run	
13190	452215.4	5771375.9	v05	44.7			-326.1	Morwell Fm	-49.55	01-Mar-21		Y	Morwell Run	Y
13190	452215.4	5771375.9	v08	44.7			-282.5	Morwell Fm	-30.45	01-Mar-21		Y	Morwell Run	Y
13190	452215.4	5771375.9	v09	44.7			-265.3	Morwell Fm	-35.02	01-Mar-21		Y	Morwell Run	
13282	448189.9	5770169.3	v04	75.3			-134.9	Morwell Fm	-29.68	10-Feb-20	Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v05	75.3			-105.4	Morwell Fm	-28.22	10-Feb-20	Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v07	75.3			-76.4	Morwell Fm	-25.68	10-Feb-20	Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v09	75.3			-34.4	Morwell Fm	7.26	10-Feb-20	Private land access issues	Y	Morwell Run	
13282	448189.9	5770169.3	v10	75.3			-9.4	Yallourn Fm	11.71	10-Feb-20	Private land access issues	Y	Morwell Run	
180177	492116.9	5771969.3	s01	137.5	172.5	179		Traralgon Fm	15.58	05-Mar-21		Y	East Run	Y
180188	492128.1	5771938.6	s01	138.6	196.9	199.1		Traralgon Fm	15.62	05-Mar-21		Y	East Run	
180189	492131.4	5771919.8	s01	139	196	202		Traralgon Fm	15.66	05-Mar-21		Y	East Run	
180196	489765.4	5769576.1	s01	165.9	312.5	319		Traralgon Fm	89.80	05-Mar-21		Y	East Run	
180204	490094.0	5776111.6	s01	16	298	304.5		Morwell Fm	15.62	05-Mar-21		Y	East Run	
180207	487919.4	5768264.2	s01	164	351.4	354.5		Traralgon Fm	93.90	05-Mar-21		Y	East Run	
180220	492038.8	5775159.9	s01	37.4	218	301.5		Traralgon Fm	23.60	05-Mar-21		Y	East Run	
180221	489155.2	5769764.7	s01	160.1	301	311		Traralgon Fm	88.79	05-Mar-21		Y	East Run	
190046	508487.9	5772005.6	s01	62.7	190.2	196.2		Traralgon Fm	22.40	05-Mar-21		Y	East Run	
190054	510717.2	5774505.0	s01	49.6	205	211.5		Traralgon Fm	19.15	05-Mar-21	Headworks damaged requires rehab	N	East Run	Y
190066	518206.8	5775571.2	s01	5.2	634	801		Gippsland Lst	5.31	05-Mar-21		N	East Run	Y
210051	488524.7	5759788.3	s01	194.2	329.4	335.2		Traralgon Fm	11.11	29-Aug-11	Access issues SWL>200 m required VWP	Y	East Run	Y
220196	479470.1	5765095.9	v01	133.8			-229.2	Traralgon Fm	42.75	05-Mar-21		Y	East Run	

220196	479470.1	5765095.9	v02	133.8				-221.2	Traralgon Fm	20.81	05-Mar-21		Y	East Run	
230034	433441.0	5777417.5	s01	67.4	52	55			Traralgon Fm	56.97	11-May-21		Y	Morwell Run	
230043	430259.2	5776387.4	s01	67.3	144	156			Traralgon Fm	68.30	11-May-21		Y	Morwell Run	
230049	429607.6	5774059.8	s01	56.3	210	219			Traralgon Fm	72.90	11-May-21		Y	Morwell Run	
230055	426835.7	5773342.0	s01	58	176	180			Traralgon Fm	73.70	11-May-21		Y	Morwell Run	
23263	441386.9	5765022.4	s01	70.73	84.6	91.5			Morwell Fm	12.50	01-Mar-21		Y	Morwell Run	Y
23270	440767.3	5764580.0	s01	65.8	45.7	46.3			Morwell Fm	55.00	01-Mar-21		N	Morwell Run	
23288	440848.0	5763326.0	s01	69.8	46.9	48.5			Morwell Fm	44.47	01-Mar-21		Y	Morwell Run	
23369	441613.4	5767774.1	v01	78.2				-58.8	Morwell Fm	-9.31	01-Mar-21		Y	Morwell Run	
23567	440054.7	5767522.5	s01	138.9	124	130			M2/TFAS	88.56	01-Mar-21		Y	Morwell Run	
23570	441929.4	5763857.5	s01	59.8	181	187			M2/TFAS	-21.77	19-Jul-21	Monitored by Engie	Y	Engie	
23607	439447.4	5766736.9	v01	135.5				44.2	M2/TFAS	44.72	01-Mar-21		Y	Morwell Run	
23607	439447.4	5766736.9	v02	135.5				48.2	M2/TFAS	46.73	01-Mar-21		Y	Morwell Run	Y
23615	439575.6	5765145.0	s01	89.4	59.1	66.1			M2/TFAS	63.72	01-Mar-21		Y	Morwell Run	
23694	440917.3	5763243.8	s01	69.9	65.6	66.6			M2/TFAS	59.78	01-Mar-21		Y	Morwell Run	
23726	438813.6	5773652.1	s01	92.7	185	194			Traralgon Fm	94.73	11-May-21		Y	Morwell Run	
23780	441612.2	5767762.3	v01	78.2				-95.8	M2/TFAS	-8.13	01-Mar-21		Y	Morwell Run	
23787	438263.2	5774053.7	s01	81.8	209	215			Morwell Fm	84.95	11-May-21		Y	Morwell Run	
23788	436212.4	5775853.2	s01	55.4	96.5	98			Traralgon Fm	56.20	07-May-07	Valve siezed cant read pressure	Y	Morwell Run	
23789	437196.5	5775011.0	s01	72	158.5	164.5			Traralgon Fm	79.93	11-May-21		Y	Morwell Run	
23799	439786.3	5772688.9	v01	155.1				-56.9	Traralgon Fm	81.66	11-May-21		Y	Morwell Run	
23799	439786.3	5772688.9	v02	155.1				-57.9	Traralgon Fm	84.64	11-May-21		Y	Morwell Run	
240047	479110.7	5778949.4	s01	44.1	426	439			Morwell Fm	29.50	05-Jan-11	Access issues	Y	East Run	
240052	482955.2	5786445.5	s01	25.4	568.8	577.8			Traralgon Fm	-3.47	05-Mar-21		Y	East Run	
40195	453831.3	5776637.3	s01	41.1	449.5	452.5			Traralgon Fm	6.42	05-Mar-21		Y	East Run	
40196	455456.5	5775945.0	s01	35	331	334			Morwell Fm	31.98	05-Mar-21		Y	East Run	
440056	486758.4	5780556.0	s01	40.2	392	401.5			Morwell Fm	21.54	05-Mar-21		Y	East Run	Y
440341	490397.2	5787973.0	s01	23	660	666			Traralgon Fm	4.47	05-Mar-21	Anomalous trend requires rehab	Y	East Run	Y
51967	471050.7	5770767.4	s01	71.1	569.5	591.5			Traralgon Fm	42.56	19-Feb-18	Blocked requires rehab.	Y	East Run	
51979	471175.2	5770762.1	s01	70.5	374	380.5			Morwell Fm	48.48	05-Mar-21		Y	East Run	
52204	465439.7	5763181.5	s01	172.8	357	360			Traralgon Fm	132.38	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
52268	464326.4	5773271.2	s01	46.9	428.9	431.9			Morwell Fm	26.42	05-Mar-21		N	East Run	
52269	471767.9	5775143.3	s01	39.1	367.3	376.8			Morwell Fm	32.00	05-Mar-21		N	East Run	
52310	469795.1	5772701.9	s01	61.4	320	333			Morwell Fm	33.60	05-Mar-21		Y	East Run	
52472	467070.0	5769821.5	s01	56.4	466.1	479			Traralgon Fm	39.47	05-Mar-21	Reclassifies TR intraseam not MFAS 2013	Y	East Run	
52477	460554.2	5763190.8	s01	87.1	171	177			Traralgon Fm	13.40	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
52676	464353.9	5773509.6	s01	44.9	672.5	692			Traralgon Fm	24.23	05-Mar-21		Y	East Run	
52678	469793.5	5772693.0	s01	61.6	694	694			Basement	10.18	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v02	70.4				-359.6	Morwell Fm	-4.90	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v03	70.4				-334.9	Morwell Fm	-4.93	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v04	70.4				-322.2	Morwell Fm	-17.54	05-Mar-21		Y	East Run	Y
52809	471249.1	5770747.5	v05	70.4				-279.7	Morwell Fm	0.38	05-Mar-21				
52809	471249.1	5770747.5	v06	70.4				-249.5	Morwell Fm	13.41	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v08	70.4				-185.3	Morwell Fm	19.17	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v09	70.4				-174.6	Morwell Fm	24.58	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v10	70.4				-160.4	Morwell Fm	21.25	05-Mar-21		Y	East Run	Y
52809	471249.1	5770747.5	v12	70.4				-109.7	Yallourn Fm	34.60	05-Mar-21		Y	East Run	

52809	471249.1	5770747.5	v13	70.4					-79.5	Yallourn Fm	34.53	05-Mar-21		Y	East Run	
52809	471249.1	5770747.5	v14	70.4					-54.8	Yallourn Fm	38.02	05-Mar-21		Y	East Run	
52810	471265.2	5770744.6	v04	70.4					-524.9	Traralgon Fm	-107.51	09-Aug-17	Headworks damage required rehab	Y	East Run	
52810	471265.2	5770744.6	v07	70.4					-473.3	Traralgon Fm	-93.35	11-Aug-16	Headworks damage required rehab	Y	East Run	
52810	471265.2	5770744.6	v09	70.4					-409.8	Morwell Fm	-36.28	09-Aug-17	Headworks damage required rehab	Y	East Run	Y
52810	471265.2	5770744.6	v10	70.4					-387.8	Morwell Fm	-37.59	09-Aug-17	Headworks damage required rehab	Y	East Run	Y
52883	471182.1	5770759.2	v01	70.6					0.8	Haunted Hills Fm	46.33	05-Mar-21		Y	East Run	Y
52883	471182.1	5770759.2	v02	70.6					34.6	Haunted Hills Fm	48.58	05-Mar-21		Y	East Run	
530024	471521.0	5792812.6	s01	60.2	234	240				Morwell Fm	13.48	05-Mar-21		Y	East Run	
530025	467896.9	5787491.0	s01	68	407.2	413				Traralgon Fm	-34.75	05-Mar-21	Re-classified to TFAS 2013	Y	East Run	
53118	462511.7	5770590.3	v09	85.8					-321.3	Morwell Fm	-33.30	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v16	85.8					-203.2	Morwell Fm	-11.29	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v17	85.8					-177.3	Morwell Fm	31.03	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v19	85.8					-122.6	Morwell Fm	21.62	05-Mar-21		Y	East Run	
53118	462511.7	5770590.3	v20	85.8					-93.2	Morwell Fm	-2.37	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v02	85.8					-35.8	Yallourn Fm	40.56	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v03	85.8					-32.6	Yallourn Fm	41.41	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v04	85.8					-24.9	Yallourn Fm	44.00	05-Mar-21		Y	East Run	
53119	462523.1	5770587.5	v05	85.8					-4.1	Yallourn Fm	46.16	05-Mar-21		Y	East Run	
53298	459795.1	5761947.1	v01	83.8					-141	Basement	56.74	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53298	459795.1	5761947.1	v02	83.8					-100.6	Basement	58.69	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53298	459795.1	5761947.1	v03	83.8					-86.3	Traralgon Fm	62.66	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53298	459795.1	5761947.1	v04	83.8					-54.4	Traralgon Fm	70.04	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v01	83.8					-26.2	Traralgon Fm	69.40	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v02	83.8					4.1	Traralgon Fm	71.79	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v03	83.8					31.5	Traralgon Fm	74.44	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
53299	459796.7	5761951.1	v04	83.8					56.3	Haunted Hills Fm	76.16	30-Jul-21	Monitored by Loy Yang (six monthly run)	Y	Loy Yang	
54348	463942.8	5761977.0	v01	218.49					49	Traralgon Fm	52.63	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	East Run	
570011	499185.7	5789589.7	s01	12.4	642	648				Morwell Fm	-1.31	21-Jul-21		N	East Run	Y
61095	443701.4	5763485.8	s01	59.79	99.6	100.8				Traralgon Fm	1.65	21-Jul-21	Monitored by Engie	Y	Engie	
61320	446644.6	5761841.5	s01	83.9	427.9	434				Traralgon Fm	67.35	01-Mar-21		Y	Morwell Run	
61333	450499.9	5764468.2	s01	81	587.3	593.6				Traralgon Fm	37.78	03-Aug-20		Y	Morwell Run	
61348	450065.1	5762455.6	s01	105.4	550.4	557.4				Traralgon Fm	41.15	25-Sep-19	Trend anomalous required rehab	Y	Morwell Run	
61502	443906.9	5760017.2	v01	73.6					-265.4	Morwell Fm	-26.40	01-Mar-21		Y	Morwell Run	
61502	443906.9	5760017.2	v02	73.6					-266.1	Morwell Fm	-28.80	01-Mar-21		Y	Morwell Run	
61631	450491.8	5764491.9	v02	80.7					-201	Morwell Fm	17.81	03-Aug-20		Y	Morwell Run	
61631	450491.8	5764491.9	v04	80.7					-181.5	Morwell Fm	13.60	03-Aug-20		Y	Morwell Run	
61632	450490.0	5764476.7	s01	81	635.5	647.5				Traralgon Fm	52.58	03-Aug-20		Y	Morwell Run	
61691	447254.1	5758810.8	v02	96.8					-289.6	Traralgon Fm	-65.18	01-Mar-21		Y	Morwell Run	
61691	447254.1	5758810.8	v03	96.8					-264.9	Traralgon Fm	-60.30	01-Mar-21		Y	Morwell Run	
61719	450024.6	5760055.4	s01	105.7	306	309				Traralgon Fm	71.11	01-Mar-21		Y	Morwell Run	
61726	448896.5	5757382.5	s01	155.5	321	347				Traralgon Fm	17.20	05-Aug-12	requires rehab	Y	Morwell Run	
80426	453595.2	5763924.2	s01	102.6	154	157				Morwell Fm	82.90	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	Loy Yang	
80433	459785.8	5773043.8	s01	34.5	340	343				Morwell Fm	26.36	05-Mar-21		N	East Run	
80440	455303.3	5765748.0	s01	97.5	164.5	170.5				Morwell Fm	77.00	29-Jul-20		N	East Run	
80442	458533.5	5760753.6	s01	129.2	142.5	149				Traralgon Fm	113.40	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	Loy Yang	

80445	458118.8	5769979.4	v03	84.4			-440.6	Traralgon Fm	-56.11	05-Mar-21		Y	East Run	
80445	458118.8	5769979.4	v09	84.4			-266.4	Morwell Fm	-19.49	05-Mar-21		Y	East Run	Y
80445	458118.8	5769979.4	v10	84.4			-239.2	Morwell Fm	-18.62	05-Mar-21		Y	East Run	Y
80487	452231.7	5761418.1	s01	129	280	286		Morwell Fm	97.38	30-Jul-21	Monitored by Loy Yang (six monthly run)	N	Loy Yang	
80489	458090.1	5766715.2	v02	124			-465.5	Traralgon Fm	-73.39	05-Mar-21		Y	East Run	
80489	458090.1	5766715.2	v05	124			-408	Traralgon Fm	-81.47	05-Mar-21		Y	East Run	
80489	458090.1	5766715.2	v06	124			-393.7	Traralgon Fm	-73.70	05-Mar-21		Y	East Run	
80493	454046.4	5769293.1	v01	59			-167.8	Yallourn Fm	33.16	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80493	454046.4	5769293.1	v02	59			-53	Hazelwood Fm	36.00	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80493	454046.4	5769293.1	v03	59			-21.1	Hazelwood Fm	40.35	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80493	454046.4	5769293.1	v04	59			12.8	Haunted Hills Fm	50.48	10-Feb-20	Access locked gate unable to contact owner	N	East Run	Y
80495	458566.9	5762110.4	s01	113.4	236	239		Traralgon Fm	65.80	03-Jun-04	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v01	113.3			-19.5	Traralgon Fm	69.80	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v02	113.3			3.3	Traralgon Fm	68.70	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v03	113.3			30.7	Traralgon Fm	70.70	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v04	113.3			61.2	Haunted Hills Fm	66.90	13-Oct-16	survey requested	Y	Loy Yang	
80496	458567.3	5762111.9	v05	113.3			86.8	Haunted Hills Fm	84.10	13-Oct-16	survey requested	Y	Loy Yang	
90323	485554.2	5772956.5	s01	113.2	211	214		Traralgon Fm	38.82	05-Mar-21		Y	East Run	
90324	476194.2	5775721.6	s01	31.4	377	384		Morwell Fm	16.14	05-Mar-21		Y	East Run	Y
90325	485793.3	5776929.8	s01	13.5	344.5	351		Morwell Fm	9.79	05-Mar-21		Y	East Run	
90330	472076.8	5768124.5	s01	74.3	478	481		Morwell Fm	8.42	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v04	31.3			-444.4	Morwell Fm	-35.26	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v05	31.3			-419.7	Morwell Fm	-24.23	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v12	31.3			-269	Morwell Fm	-13.52	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v14	31.3			-214.1	Morwell Fm	-1.94	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v16	31.3			-153.1	Morwell Fm	-4.81	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v17	31.3			-112.8	Yallourn Fm	-25.11	05-Mar-21		Y	East Run	
90340	476223.3	5775710.2	v18	31.3			-98.6	Yallourn Fm	-20.89	05-Mar-21		Y	East Run	
90344	476518.6	5769420.1	v01	61			-371.4	Traralgon Fm	31.72	05-Mar-21		N	East Run	
90344	476518.6	5769420.1	v02	61			-369.4	Traralgon Fm	32.71	05-Mar-21		N	East Run	
90344	476518.6	5769420.1	v03	61			-222.7	Morwell Fm	1.90	05-Mar-21		N	East Run	
90344	476518.6	5769420.1	v04	61			-113.3	Morwell Fm	9.98	05-Mar-21	Terminal box repaired	N	East Run	
920007	508838.5	5764253.6	s01	50.1	725	737		Traralgon Fm	5.60	05-Jan-11	Vandalised - required rehab	Y	East Run	Y

OTHER BORES USED TO SUPPLEMENT NETWORK

LocCode	MGA E	MGA N	Install No	(mAHD)	from (m)	(m)	(mAHD)	Monitoring Unit	RWL (mAHD)	RWL date	Comments	Licence	Monitored	Key Bore
130213	469298.9	5766777.0	s01	82.42	16	18		Morwell Fm	76.53	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
130214	469183.9	5766777.0	v01	94.99			-20.11	Morwell Fm	62.33	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
130219	469971.3	5765798.0	s01	111.76	21	27		Haunted Hills Fm	96.52	05-Mar-21	Flynn Bore private property	N	East Run	
130220	469599.7	5765283.3	s01	110.42	19	21		Haunted Hills Fm	97.27	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
130220	469599.7	5765283.3	v02	110.42			-14.58	Morwell Fm	85.87	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
130220	469599.7	5765283.3	v03	110.42			45.42	Yallourn Fm	95.66	05-Mar-21	Flynn Bore Road Reserve	N	East Run	
25952	441054.3	5766503.8	v01	91.15			-41.85	Morwell Fm	30.86	01-Mar-21	Exergen bore Roadside reserve	N	Morwell Run	
25952	441054.3	5766503.8	v02	91.15			-16.45	Morwell Fm	37.89	01-May-21	Exergen bore Roadside reserve	N	Morwell Run	
26091	447736.0	5772597.5	s01	100.27	46	49		Haunted Hills Fm	54.57	02-Jun-21	Monitored by Yallourn (13282 replacement)	N	Yallourn	
31694	448305.2	5775545.2	s01	36.2	217.1	220.1		Morwell Fm	7.70	05-Mar-21	Bore assessed 2018 added to run	N	Morwell Run	
62894	395650.22	258930.303	v02	58.43			-56.06	Morwell Fm	-37.23	29-Jul-21	Monitored by Engie (23271 replacement)	N	Engie	

LICENCED REGIONAL MONITORING BORES TO BE REMOVED FROM NETWORK

LocCode	MGA E	MGA N	Install No	(mAHD)	from (m)	(m)	(mAHD)	Monitoring Unit	RWL (mAHD)	RWL date	Comments	Licence	Monitored	Key Bore
100093	497011.0	5770396.8	s01	129.5	116	122.5		Traralgon Fm	17.60	07-Jan-10	Standpipe sealed with VVPs	Y	Sealed	Y
110034	468355.4	5784414.3	s01	52.1	398	404.5		Traralgon Fm	30.10	07-Jan-10	Standpipe sealed with VVPs 2012	Y	Sealed	Y
110037	457677.3	5777000.9	s01	36.7	564.5	578		Traralgon Fm	28.00	21-Aug-12	Sealed 2013	Y	Sealed	
110038	462421.7	5778300.2	s01	31.4	529.5	533		Traralgon Fm	32.20	20-Jun-06	Sealed	Y	Sealed	
110040	460998.3	5777499.3	s01	28.2	317	323.5		Morwell Fm	26.70	08-Dec-99	Sealed 2002 blocked 103m unable to clear	Y	Sealed	
120141	442281.4	5756983.2	p01	69			-189.3	Morwell Fm	67.20	24-Nov-93	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p02	69			-143.8	Morwell Fm	66.60	14-Jun-94	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p03	69			-105	Morwell Fm	63.90	24-Nov-93	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p04	69			-7.5	Morwell Fm	66.00	24-Oct-94	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p05	69			12	Morwell Fm	68.00	24-Oct-94	Never monitored by RMC	Y	Not monitored	
120141	442281.4	5756983.2	p06	69			31.5	Morwell Fm	68.20	24-Oct-94	Never monitored by RMC	Y	Not monitored	
12034	445085.9	5767863.0	s01	54.3	297	301.9		Morwell Fm	-50.9	27-Jun-79	Never monitored by RMC	Y	Not monitored	
12390	452215.4	5771375.9	v04	44.7	556	561		Morwell Fm	-30.1	30-Nov-88	Never monitored by RMC	Y	Not monitored	
12758	445825.7	5769669.5	s01	66.8	250.5	263.5		Morwell Fm	-11.00	21-Aug-89	Never monitored by RMC	Y	Not monitored	
130165	470693.0	5766298.2	s01	113.5	254.2	257.2		Morwell Fm	67.60	21-Jun-02	Standpipe sealed with VVPs 2003	Y	Sealed	Y
130167	470881.5	5761012.9	s01	216.1	173.5	175.4		Traralgon Fm	77.70	08-Dec-03	Standpipe sealed with VVPs 2005	Y	Sealed	Y
130176	470627.8	5766257.6	s01	113.8	516	517		Traralgon Fm	35.70	15-Jun-04	Sealed 2004	Y	Sealed	
130183	467922.8	5763555.1	s01	126.7	420	423		Traralgon Fm	27.5	02-Dec-95	Never monitored by RMC Sealed 1995	Y	Not monitored	
13101	450742.9	5767976.3	s01	63	606	613		Traralgon Fm	49.50	05-Jul-02	Sealed 2002 over screen, sealing completed 2014.	Y	Sealed	
13190	452215.4	5771375.9	v04	44.7			-340.3	Morwell Fm	-26.13	16-Jun-10	Instrument failed	Y	Morwell Run	
13190	452215.4	5771375.9	v06	44.7			-313.5	Morwell Fm	-3.92	26-Dec-01	Instrument failed	Y	Morwell Run	
13190	452215.4	5771375.9	v07	44.7			-300.8	Morwell Fm	-25.19	08-Jan-09	Instrument failed	Y	Morwell Run	
13282	448189.9	5770169.3	v02	75.3			-168.9	Morwell Fm	-27.62	21-Jun-03	Instrument failed	Y	Morwell Run	
220196	479470.1	5765095.9	s01	133.8	349.6	369.4		Traralgon Fm	52.20	14-Dec-01	Sealed May 2013 VWP installed	Y	Sealed	
220197	479600.4	5765285.3	s01	133.7	339	340.5		Traralgon Fm	111.70	21-Aug-12	Sealed in 2013 same site as 220196	Y	Sealed	
22491	442623.8	5764678.1	s01	58.2	87.5	89		Morwell Fm	26.20	20-Jan-11	On mine batters removed from network	Y	Engie to seal	
23369	441613.4	5767774.1	S01	78.2	143	144		Morwell Fm	2.80	15-Jun-94	Sealed 2002 VWP installed	Y	Sealed	
23607	439447.4	5766736.9	s01	135.5	83.6	90.1		M2/TFAS	54.24	16-Jun-10	Sealed 2011 VVPs installed	Y	Sealed	Y
23780	441612.2	5767762.3	s01	78.2	187.5	194		M2/TFAS	55.20	06-Jan-98	Sealed 2002 VVPs installed	Y	Sealed	
23799	439786.3	5772688.9	s01	155.1	211.5	214.5		Traralgon Fm	85.64	08-Jan-08	Sealed 2008 VVPs installed	Y	Sealed	
24558	441290.8	5768349.6	s01	79.2	164	170		Morwell Fm	47.00	11-Dec-90	Never monitored by RMC	Y	Not monitored	
24651	441552.4	5768153.6	s01	74.5	170	173		Morwell Fm	44.40	06-Jan-98	Never monitored by RMC	Y	Not monitored	
24652	441638.8	5769050.8	s01	80.2	192.5	195.5		Morwell Fm	45.60	19-May-92	Never monitored by RMC	Y	Not monitored	
440058	484197.4	5779524.9	s01	26.5	526	535		M2/TFAS	8.84	21-Jan-13	Sealed 2013 on new highway alignment	Y	Sealed	
52179	459858.2	5760304.2	s02	101.4	214	230		Basement			Never monitored by RMC	Y	Not monitored	
52594	463044.0	5760680.9	s01	194.3	110.7	123.8		Traralgon Fm	116.80	25-Sep-95	Sealed, never read by RMC	Y	Previously LY	
52809	471249.1	5770747.5	v07	70.4			-219.3	Morwell Fm	3.55	25-Jun-10	Instrument failure	Y	East Run	
52810	471265.2	5770744.6	v05	70.4			-516.8	Traralgon Fm	-99.53	29-Dec-08	Instrument failure	Y	East Run	
52984	466789.0	5767733.2	s01	84.3	350	353		Traralgon Fm	35.10	27-Mar-96	Never monitored by RMC	Y	Previously LY	
52985	466782.4	5767736.5	s01	84.4	98	101		Morwell Fm	66.50	27-Mar-96	Never monitored by RMC	Y	Previously LY	
53038	462346.2	5769471.2	s01	74.6				Morwell Fm	33.60	27-Oct-96	Never monitored by RMC	Y	Not monitored	
53055	459791.9	5768182.4	s01	54.2	384.5	387.5		Morwell Fm	-36.10	27-Aug-04	Previously monitored by Loy Yang	Y	Previously LY	
53075	463305.9	5768539.9	v01	66.6			-111.2	Morwell Fm	-26.80	07-Jan-02	Previously monitored by Loy Yang	Y	Previously LY	
53075	463305.9	5768539.9	v02	66.6			-161.2	Morwell Fm	10.20	07-Aug-00	Previously monitored by Loy Yang	Y	Previously LY	

53118	462511.7	5770590.3	v01	85.8			-456.8	Traralgon Fm	-30.90	25-Sep-95	Instrument failure	Y	Not monitored	
53118	462511.7	5770590.3	v05	85.8			-368.6	Morwell Fm	-0.40	01-Oct-98	Instrument failure	Y	Not monitored	
53118	462511.7	5770590.3	v14	85.8			-243.2	Morwell Fm	28.45	22-Aug-18	Instrument failure	Y	East Run	
53118	462511.7	5770590.3	v15	85.8			-217.4	Morwell Fm	-24.86	04-Feb-16	Instrument failure	Y	East Run	
53352	460334.1	5764856.4	v01	69.3			-348.2	Basement	-5.70	13-Oct-16	Cables checked not reading remove	Y	Previously LY	
53352	460334.1	5764856.4	v02	69.3			-313.2	Basement	-10.40	13-Oct-16	Cables checked not reading remove	y	Previously LY	
53353	460327.5	5764845.3	v01	69.3			-248.6	Traralgon Fm Volc	-31.83	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v02	69.3			-210.7	Traralgon Fm Volc	-34.87	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v03	69.3			-166.7	Traralgon Fm	6.05	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v04	69.3			-144.4	Traralgon Fm	9.82	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v05	69.3			-112.1	Traralgon Fm	10.10	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
53353	460327.5	5764845.3	v06	69.3			-68.9	Morwell Fm	23.00	29-Jun-18	Cables checked not reading remove	Y	Previously LY	
61502	443906.9	5760017.2	s01	73.6	339	340.4		Morwell Fm	67.25	06-Jan-15	Sealed May 2015 VVPs installed	Y	Morwell Run	
61631	450491.8	5764491.9	v01	80.7			-213.7	Morwell Fm	22.00	08-Jan-97	Instrument failed not monitored by RMC	Y	Morwell Run	
61631	450491.8	5764491.9	v03	80.7			-191.7	Morwell Fm	13.00	21-Dec-11	Instrument failure	Y	Morwell Run	
61691	447254.1	5758810.8	v04	96.8			-204.8	Morwell Fm	-24.49	16-Feb-17	Instrument failure	Y	Morwell Run	
80445	458118.8	5769979.4	v04	84.4			-415.9	Traralgon Fm	-119.63	21-Jan-14	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v05	84.4			-395.2	Morwell Fm	-75.03	05-Jan-15	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v06	84.4			579.9	Morwell Fm	-85.64	07-Jan-10	Instrument failed	Y	East Run	
80445	458118.8	5769979.4	v08	84.4			-309.6	Morwell Fm	-30.14	05-Jan-11	Instrument failed	Y	East Run	
80489	458090.1	5766715.2	v03	124			-452.6	Traralgon Fm	-78.50	05-Jan-15	Instrument failed	Y	East Run	
80489	458090.1	5766715.2	v04	124			-444	Traralgon Fm	-52.60	08-Apr-99	Instrument failed data unreliable	Y	East Run	
80490	458637.0	5766441.2	v01	80.2			-261.2	Traralgon Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v03	80.2			-249.5	Traralgon Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v04	80.2			-240.7	Traralgon Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v05	80.2			-206.9	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v06	80.2			-176.4	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v07	80.2			-149.1	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v08	80.2			-134.4	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80490	458637.0	5766441.2	v09	80.2			-109	Morwell Fm			Never monitored by RMC	Y	Previously LY	
80491	460315.0	5768771.6	v02	49.5			-474.9	Traralgon Fm	-51.40	04-Jan-01	Instrument failed	Y	Not monitored	
80491	460315.0	5768771.6	v06	49.5			-367	Morwell Fm	-30.20	13-Oct-03	Instrument failed / access	Y	Not monitored	
80491	460315.0	5768771.6	v07	49.5			-349.7	Morwell Fm	13.80	27-Sep-01	Instrument failed	Y	Not monitored	
80491	460315.0	5768771.6	v08	49.5			-315.8	Morwell Fm	-19.50	27-Sep-01	Instrument failed	Y	Not monitored	
80491	460315.0	5768771.6	v09	49.5			-262.3	Morwell Fm	13.70	13-Oct-03	Instrument failed / access	Y	Not monitored	
80491	460315.0	5768771.6	v11	49.5			-74.8	Yallourn Fm	43.80	13-Oct-03	Instrument failed / access	Y	Not monitored	
80491	460315.0	5768771.6	v12	49.5			-32.3	Yallourn Fm	40.00	13-Oct-03	Instrument failed / access	Y	Not monitored	
90335	480482.3	5776174.6	s01	19.7	385	388		Morwell Fm	28	27-Jun-93	Never monitored by RMC	Y	Not monitored	
90339	475702.3	5772890.4	s01	38.6	632.5	652		Traralgon Fm	30.8	03-Jun-97	Never monitored by RMC	Y	Not monitored	
90340	476223.3	5775710.2	v01	31.3			-514.1	Traralgon Fm	-34.04	21-Jan-14	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v03	31.3			-465.1	Morwell Fm	-10.11	05-Jan-15	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v06	31.3			-412	Morwell Fm	-24.77	21-Aug-13	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v07	31.3			-397.8	Morwell Fm	-0.23	15-Dec-05	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v08	31.3			-374.1	Morwell Fm	4.70	14-Dec-00	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v09	31.3			-333.7	Morwell Fm	3.40	20-Jul-00	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v10	31.3			-319.5	Morwell Fm	1.30	20-Jul-00	Instrument failed	Y	East Run	

90340	476223.3	5775710.2	v11	31.3			-305.3	Morwell Fm	-4.73	15-Jun-04	Instrument failed	Y	East Run	
90340	476223.3	5775710.2	v13	31.3			-244.3	Morwell Fm	9.50	06-Dec-96	Instrument failed	Y	East Run	
90343	480883.6	5771120.1	s01	74.7	322	325		Traralgon Fm	32.31	04-Feb-16	Sealed 2019 Re-classified TFAS 2013	Y	East Run	

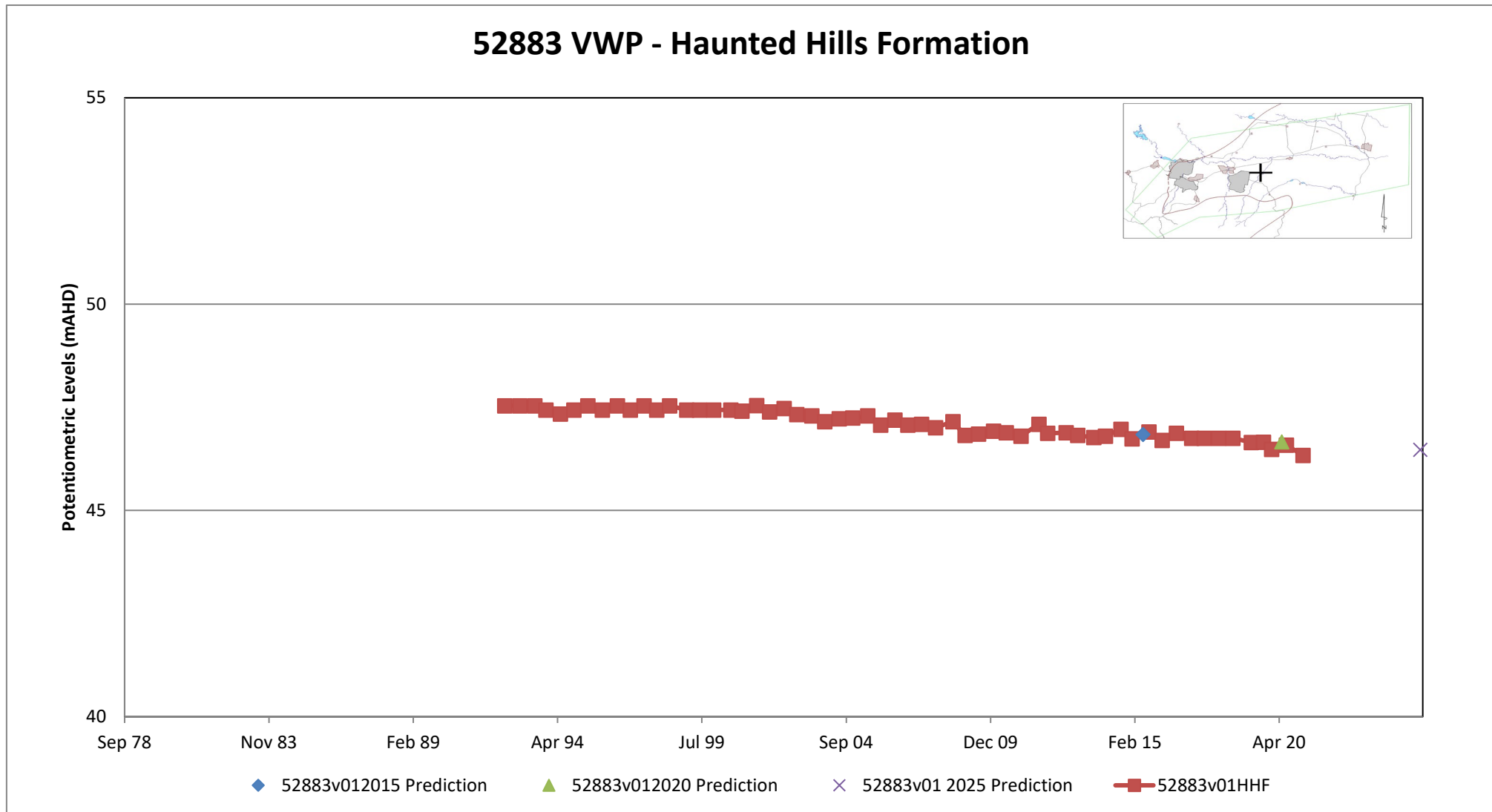
Appendix E

Key Bore Hydrographs



Appendix E Key Bore Hydrographs

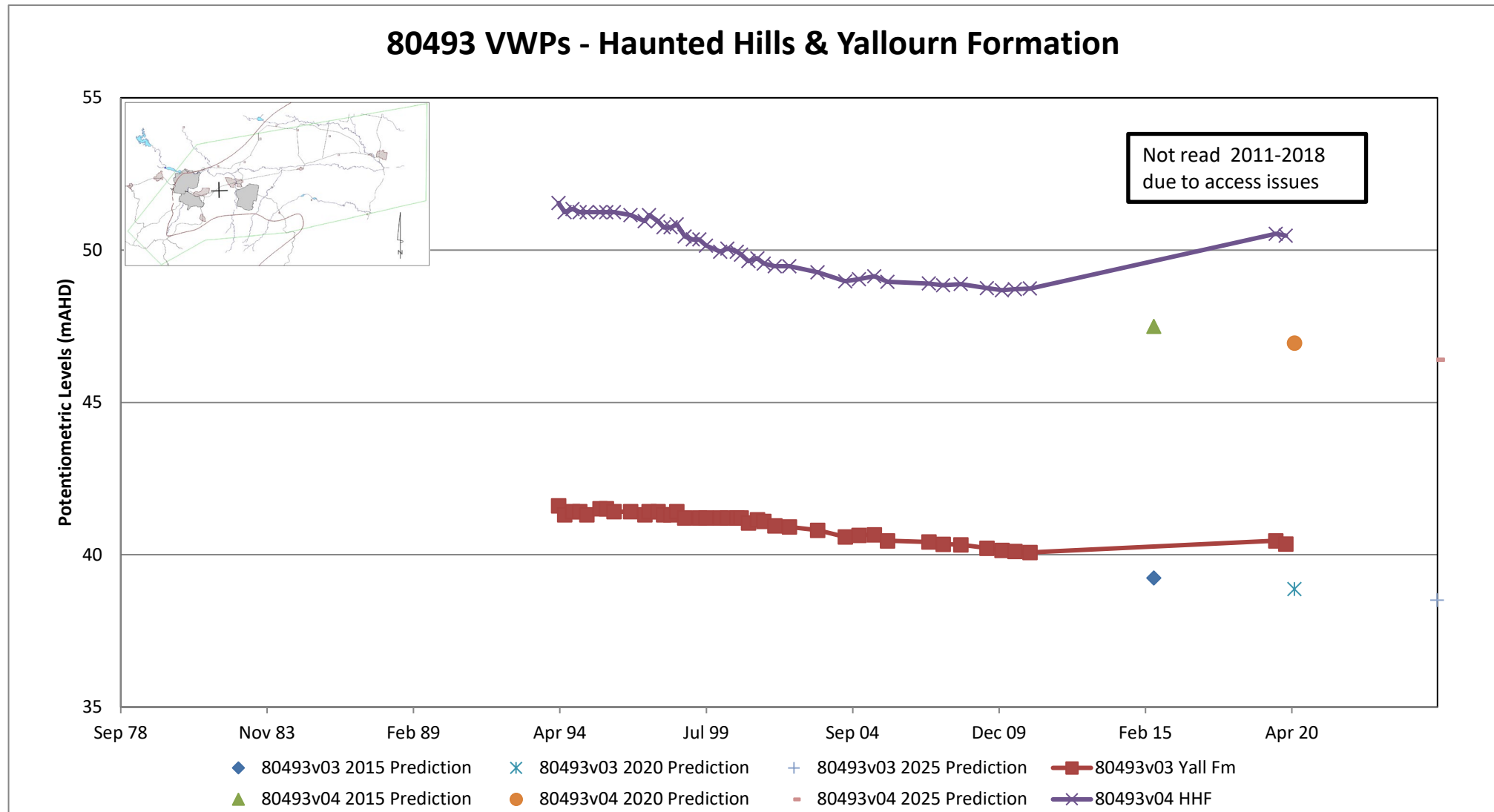
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Appendix E Key Bore Hydrographs

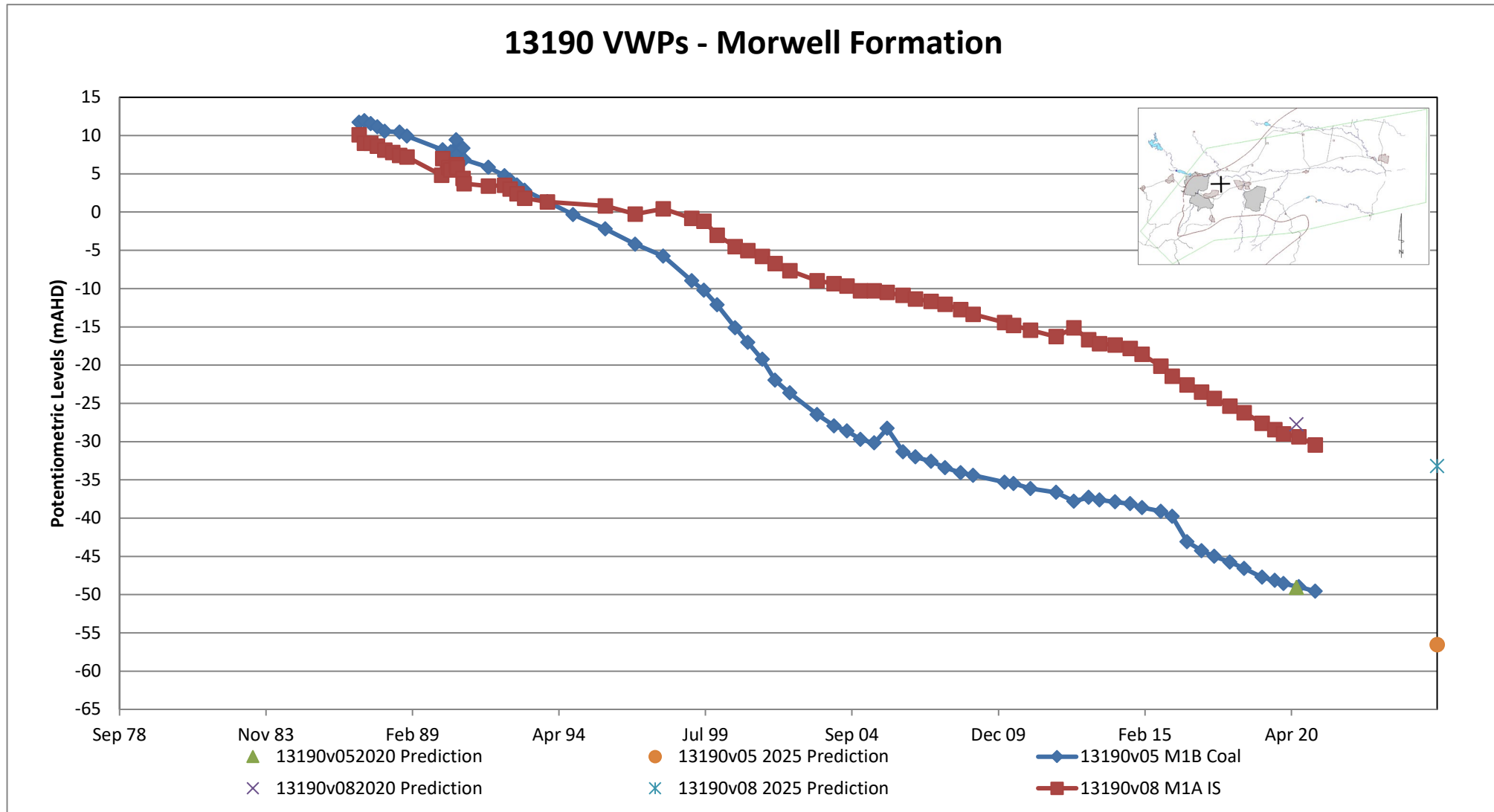
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Appendix E Key Bore Hydrographs

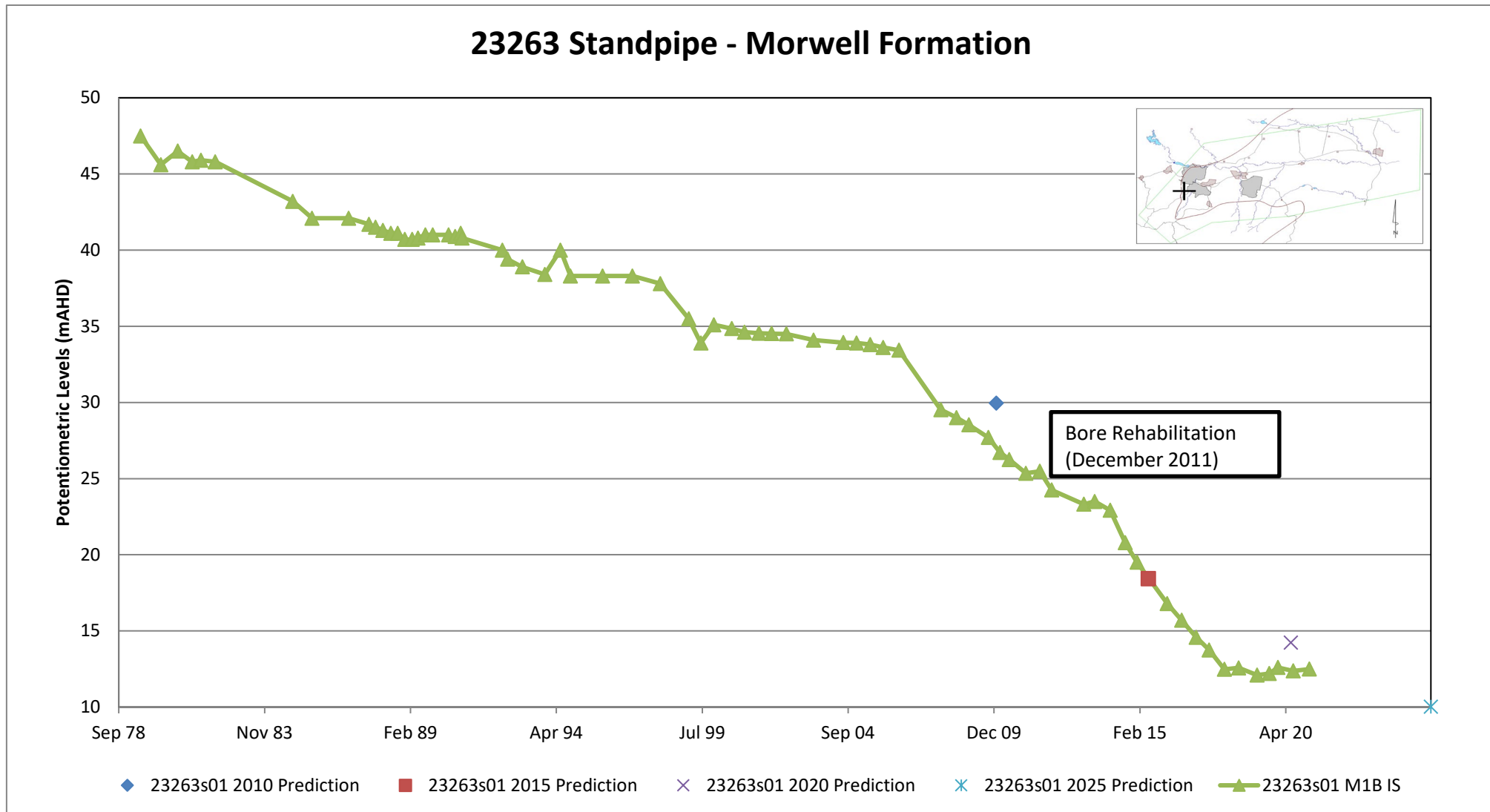
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Appendix E Key Bore Hydrographs

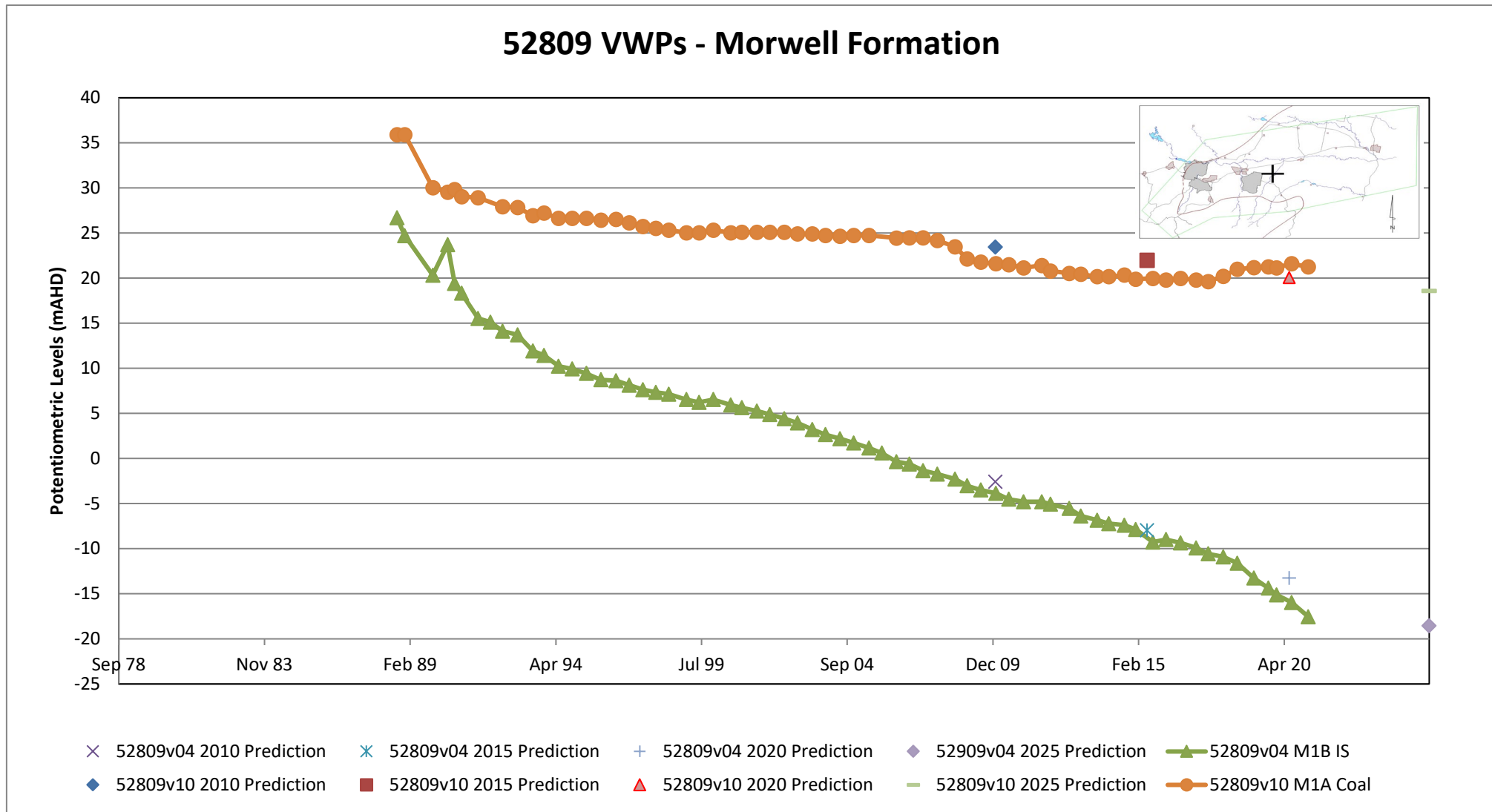
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Appendix E Key Bore Hydrographs

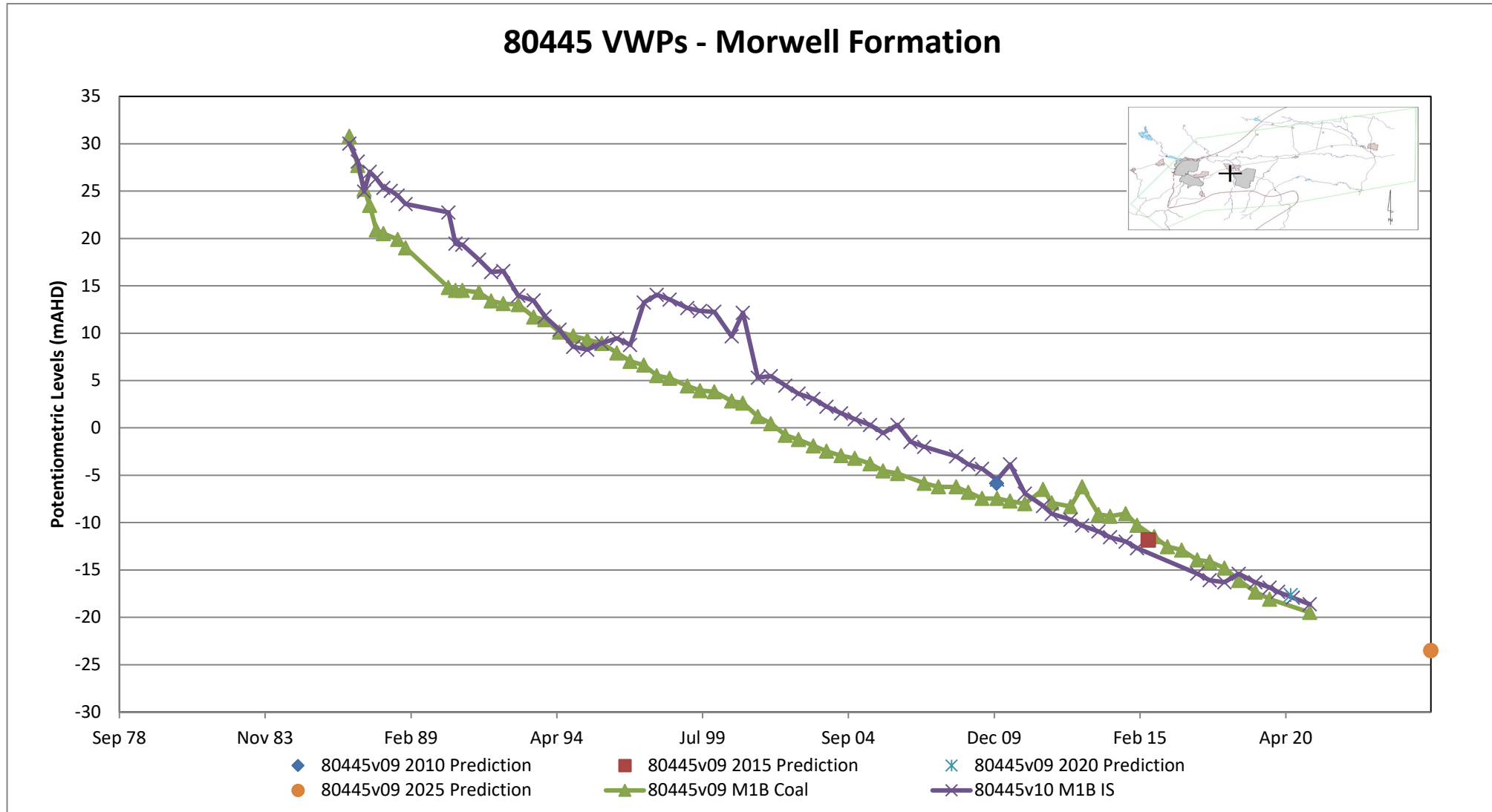
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Appendix E Key Bore Hydrographs

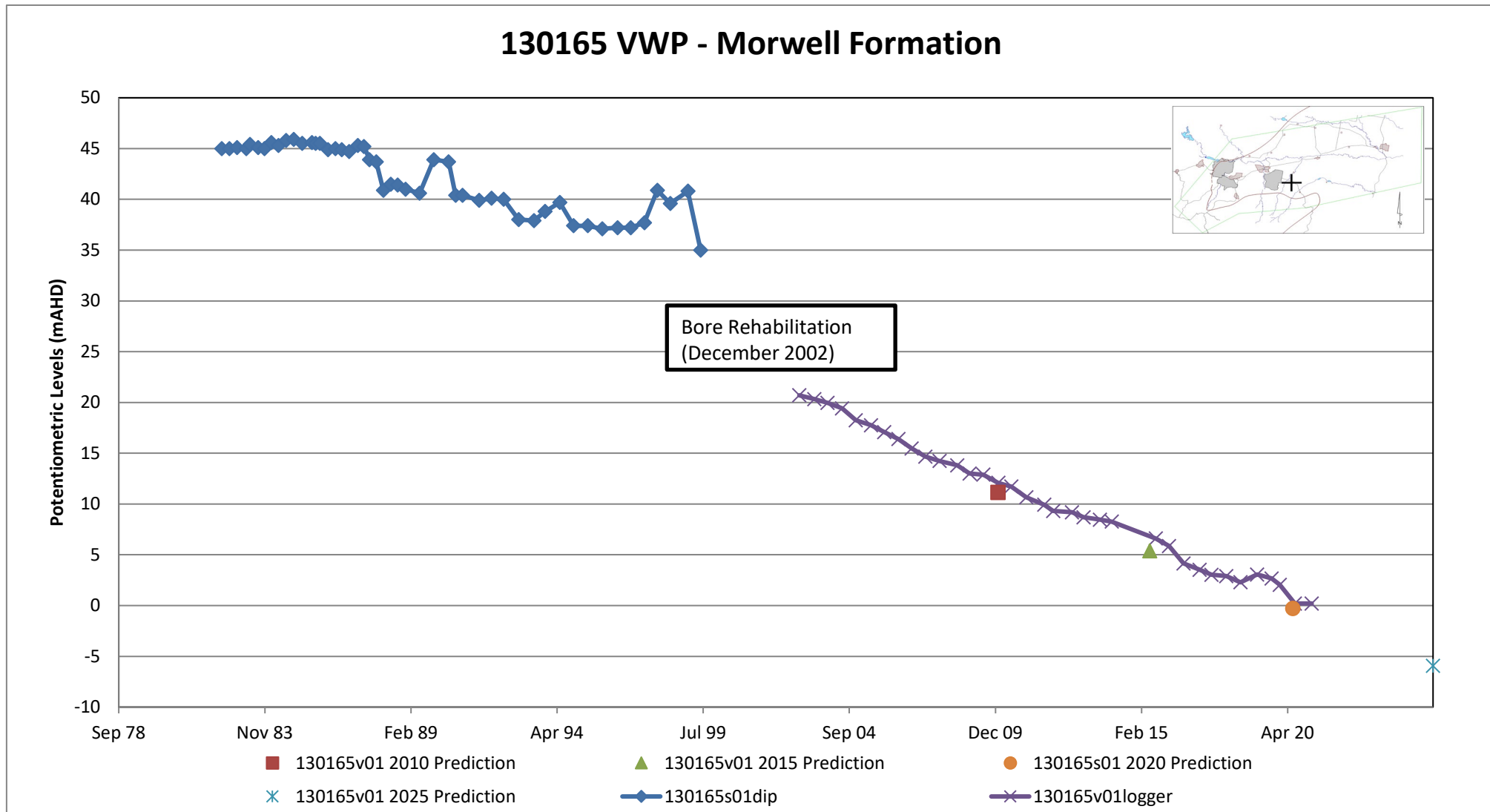
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Appendix E Key Bore Hydrographs

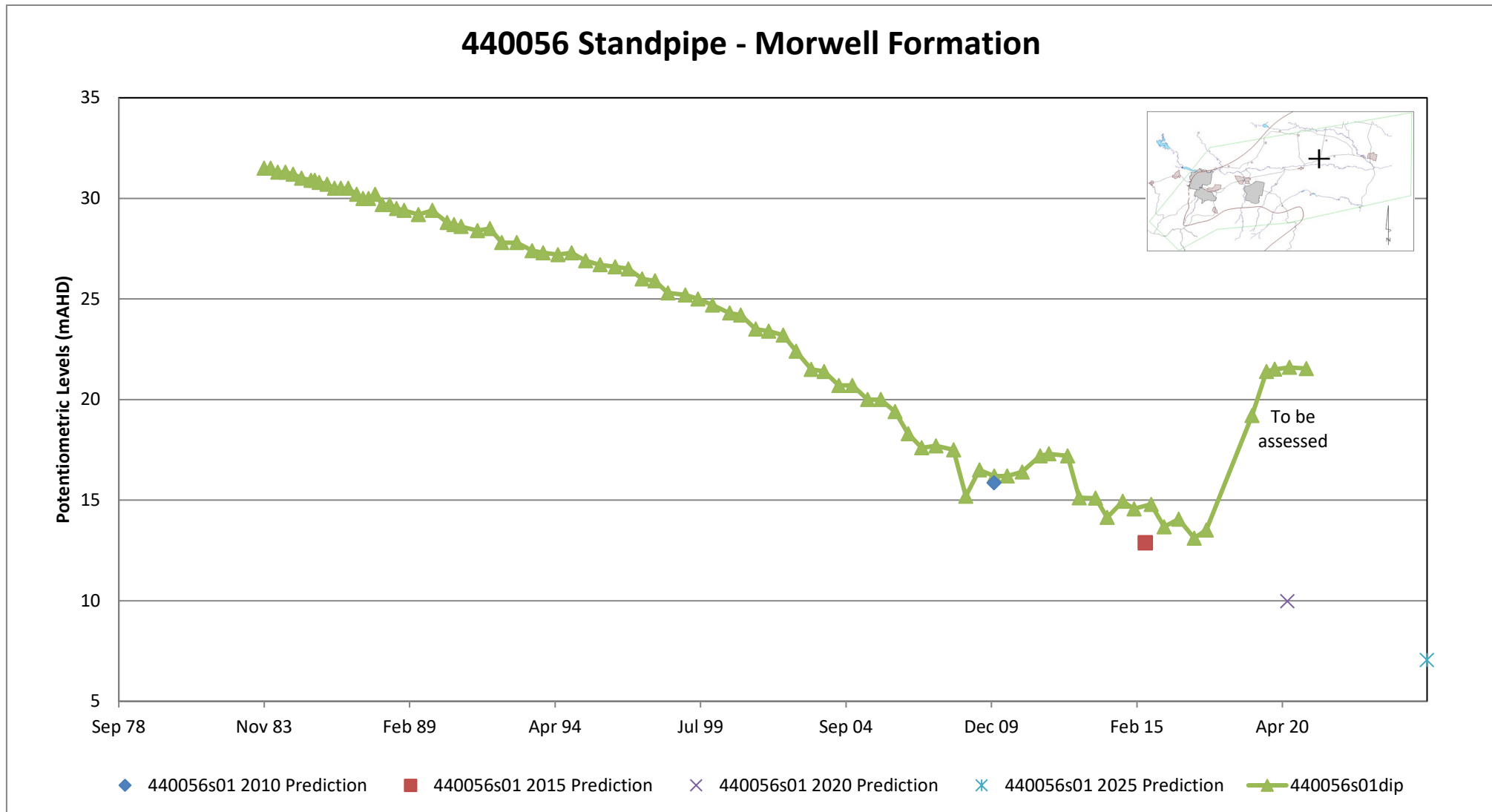
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Appendix E Key Bore Hydrographs

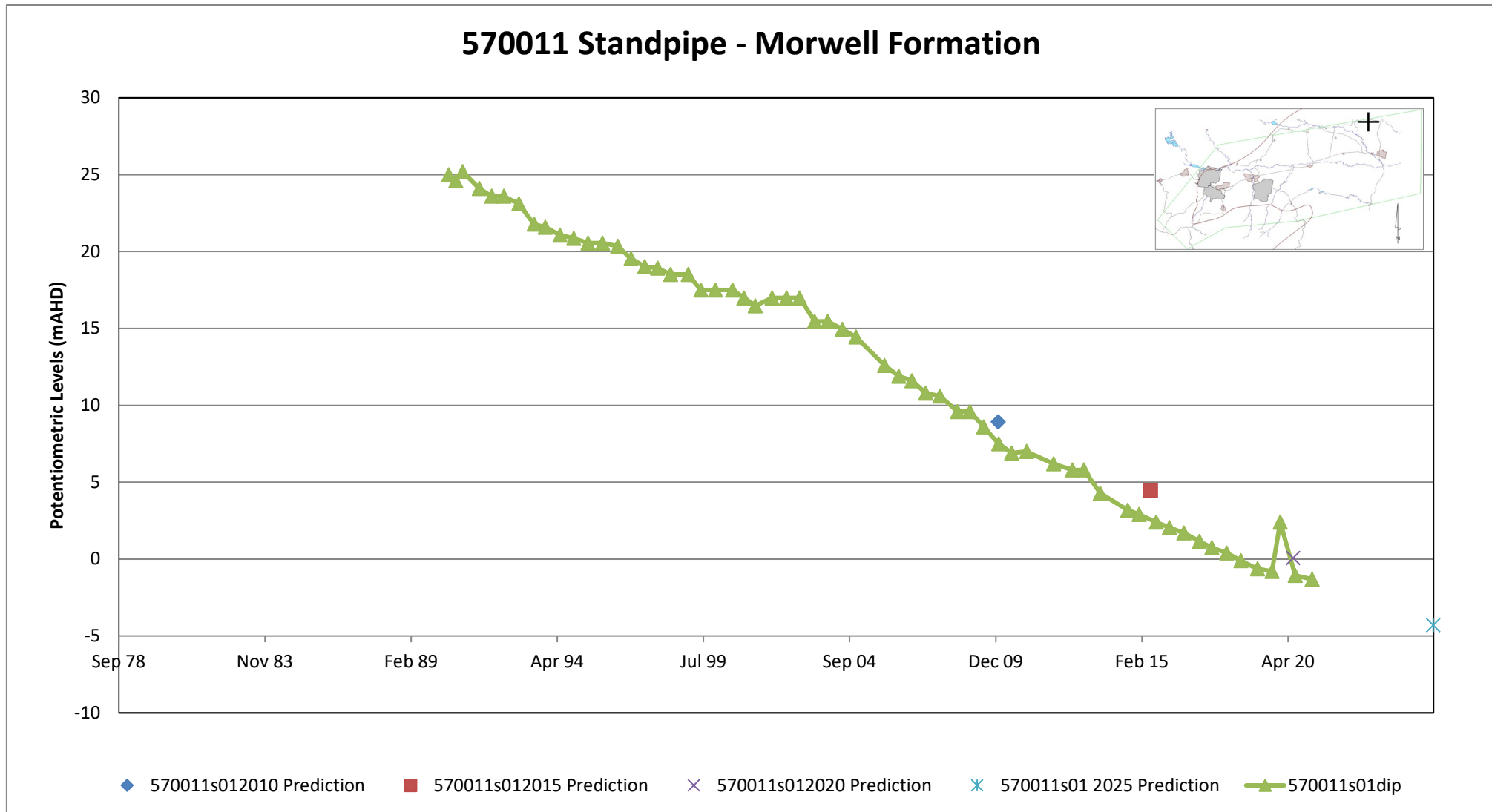
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Appendix E Key Bore Hydrographs

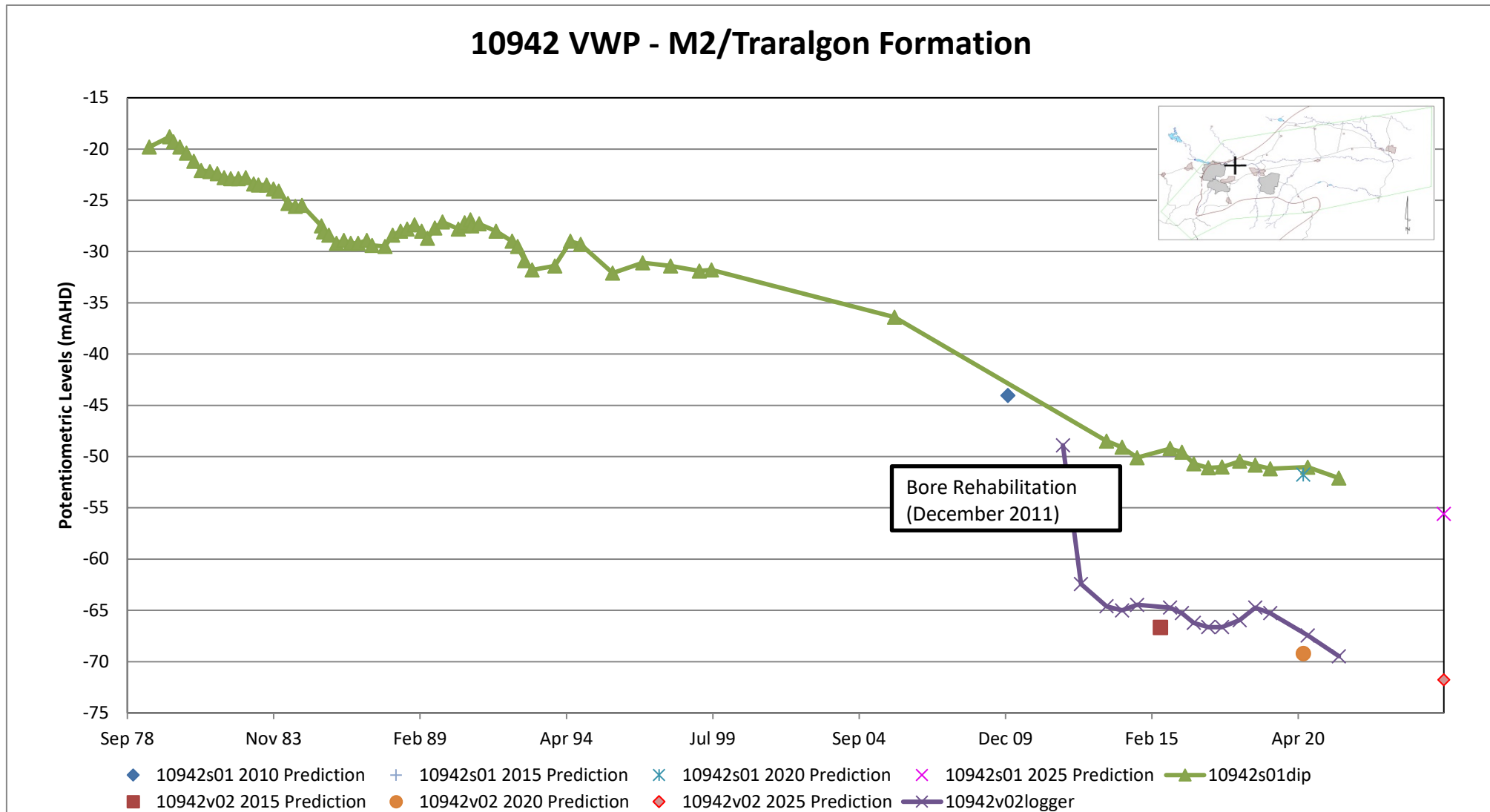
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Appendix E Key Bore Hydrographs

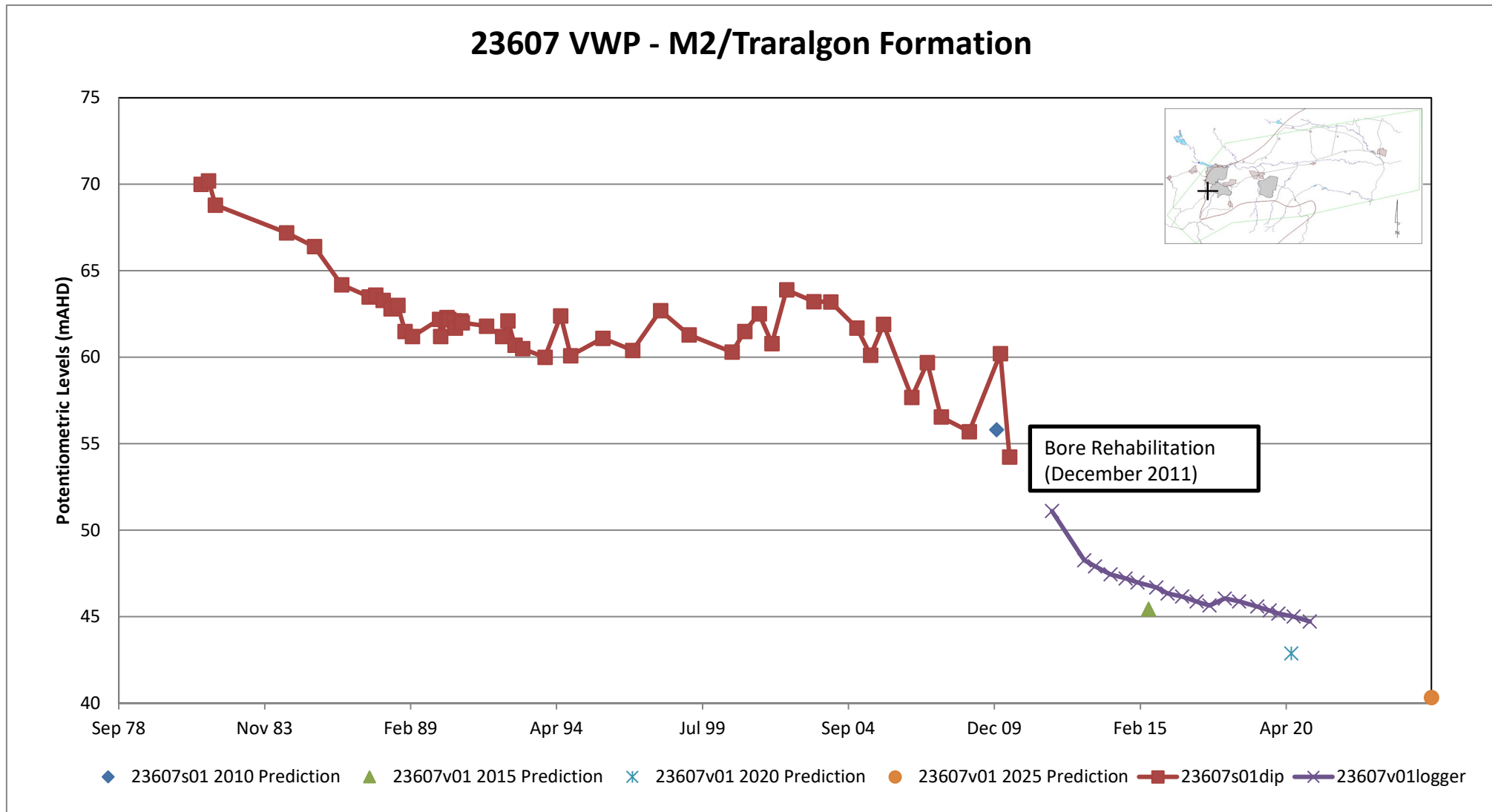
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Appendix E Key Bore Hydrographs

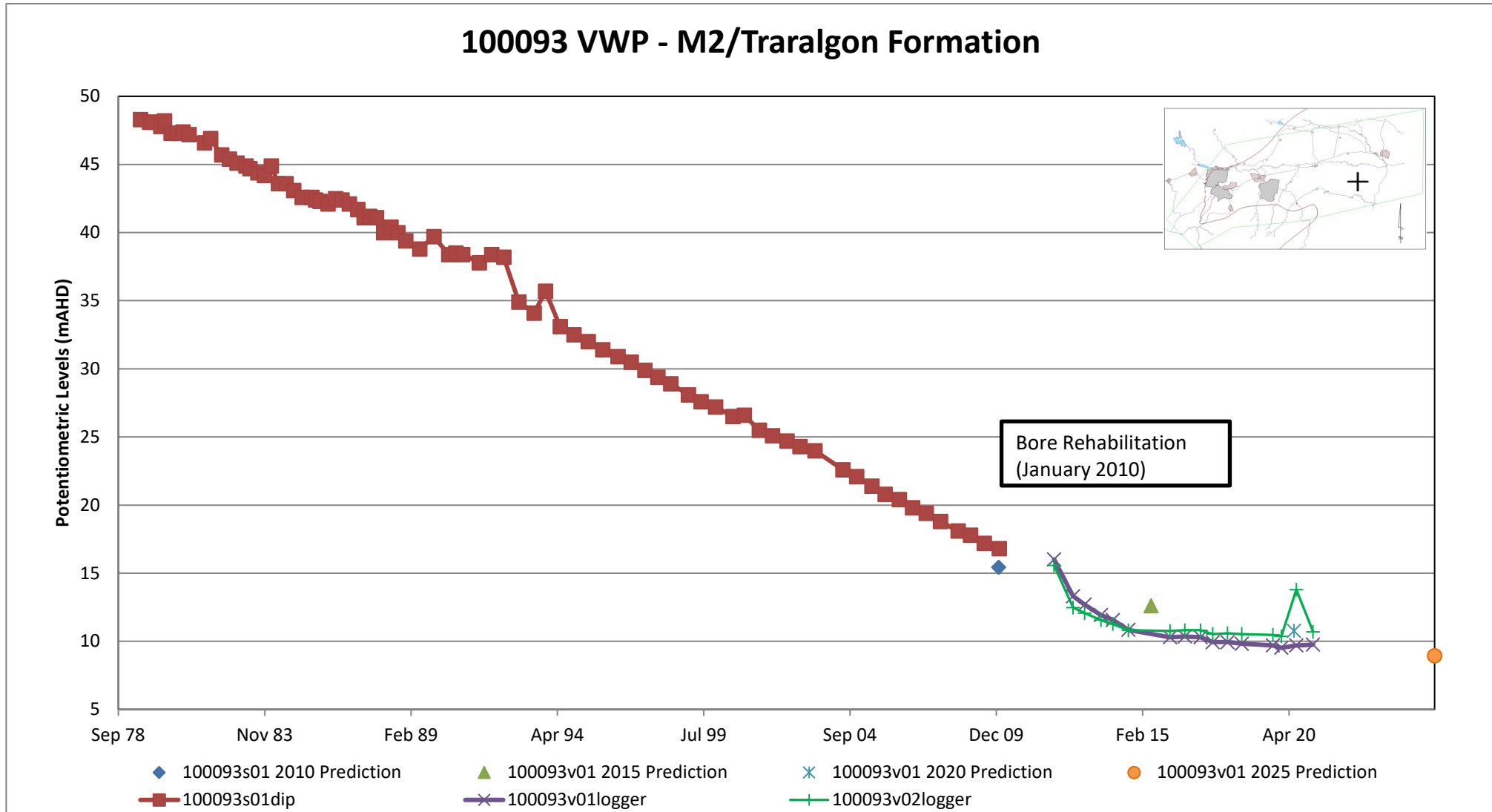
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Appendix E Key Bore Hydrographs

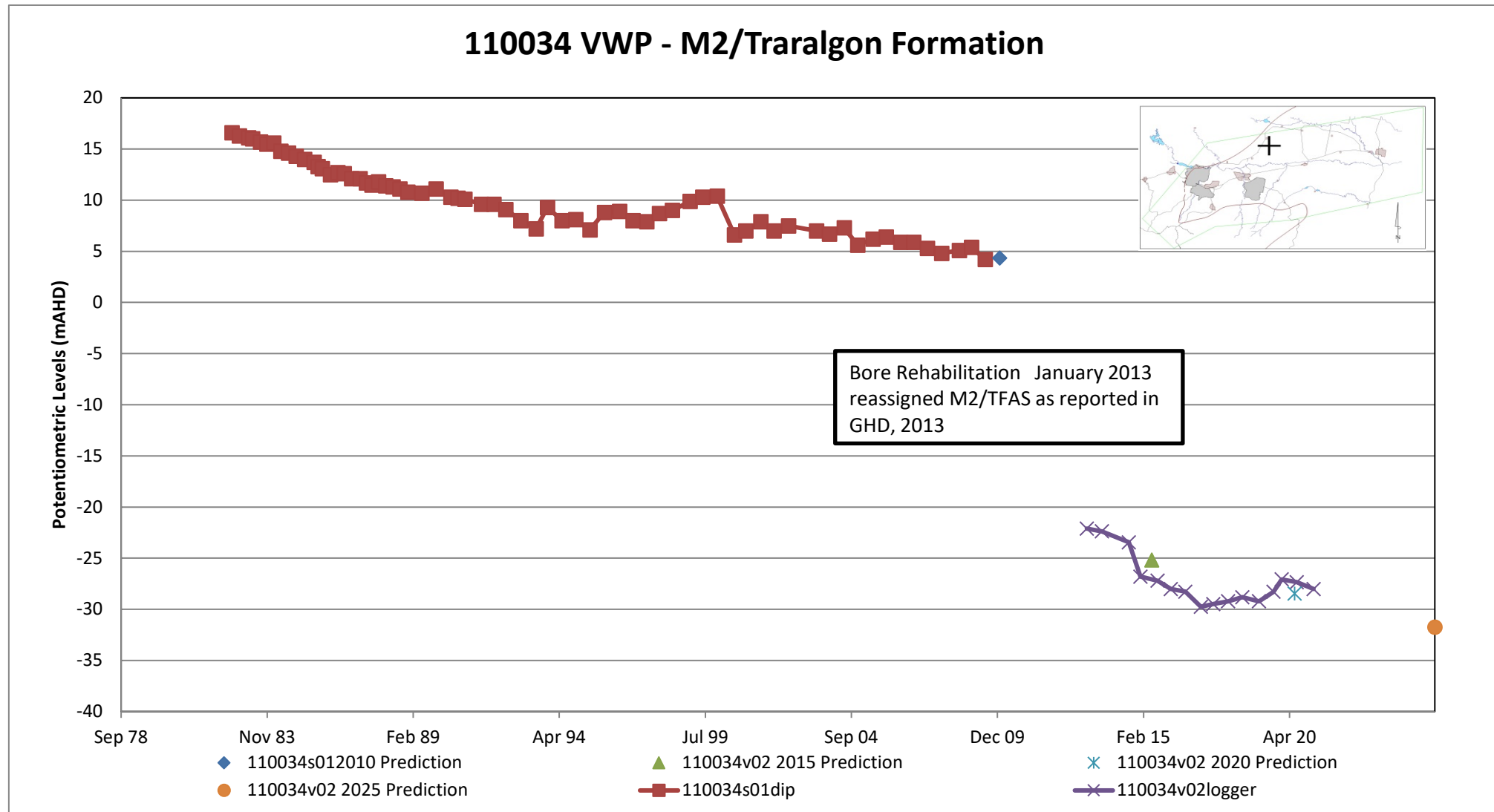
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Appendix E Key Bore Hydrographs

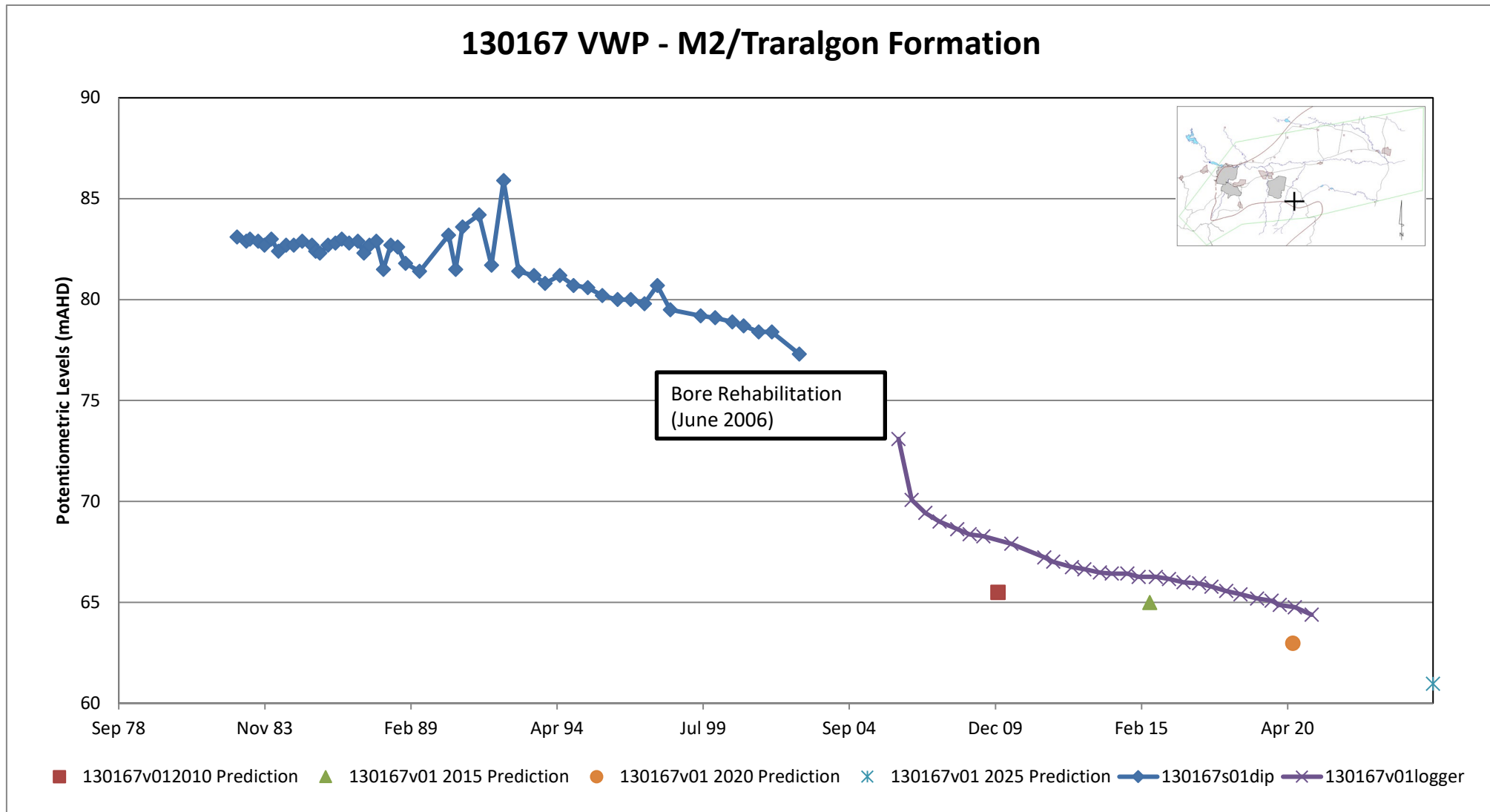
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Appendix E Key Bore Hydrographs

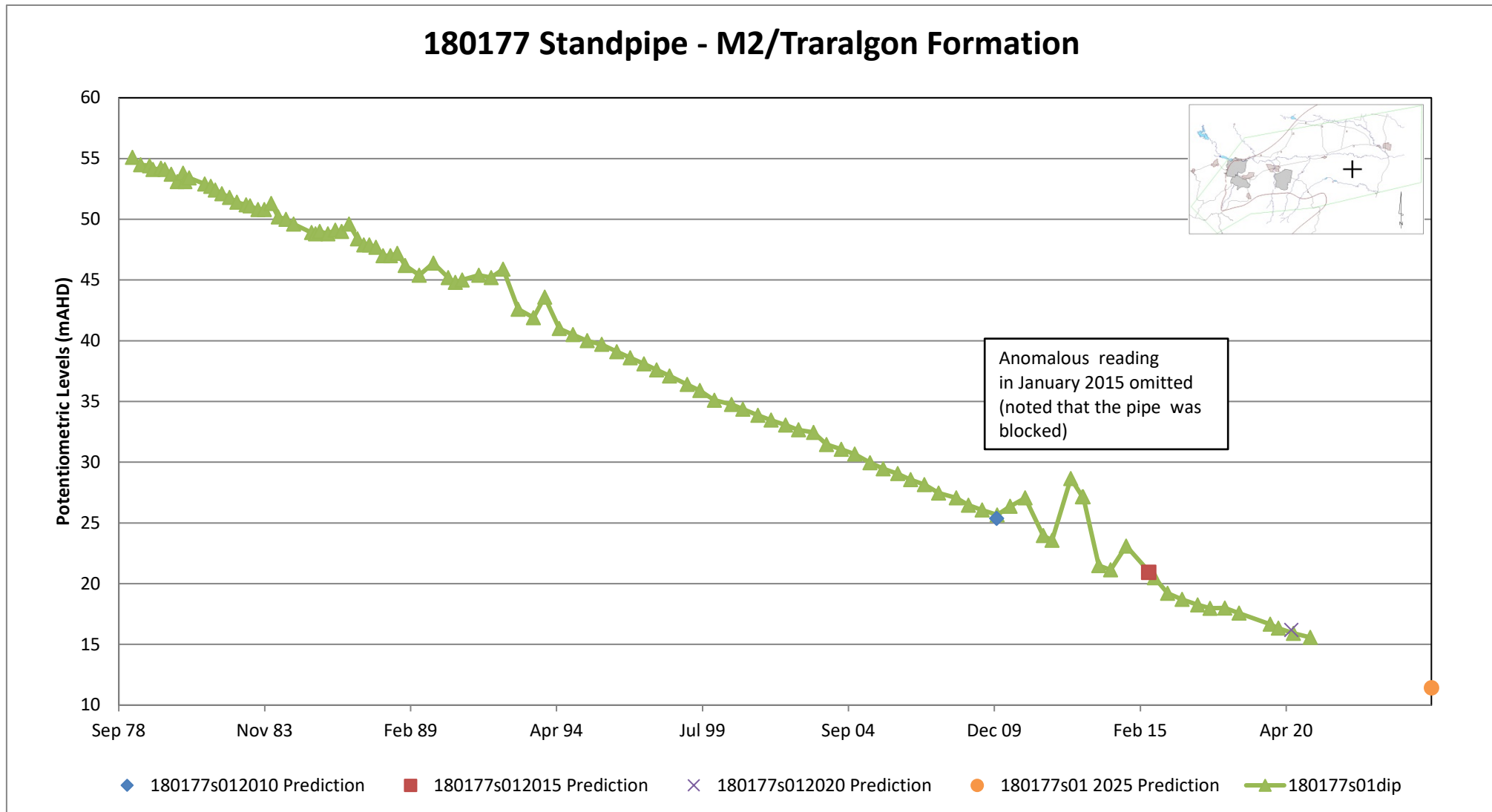
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Appendix E Key Bore Hydrographs

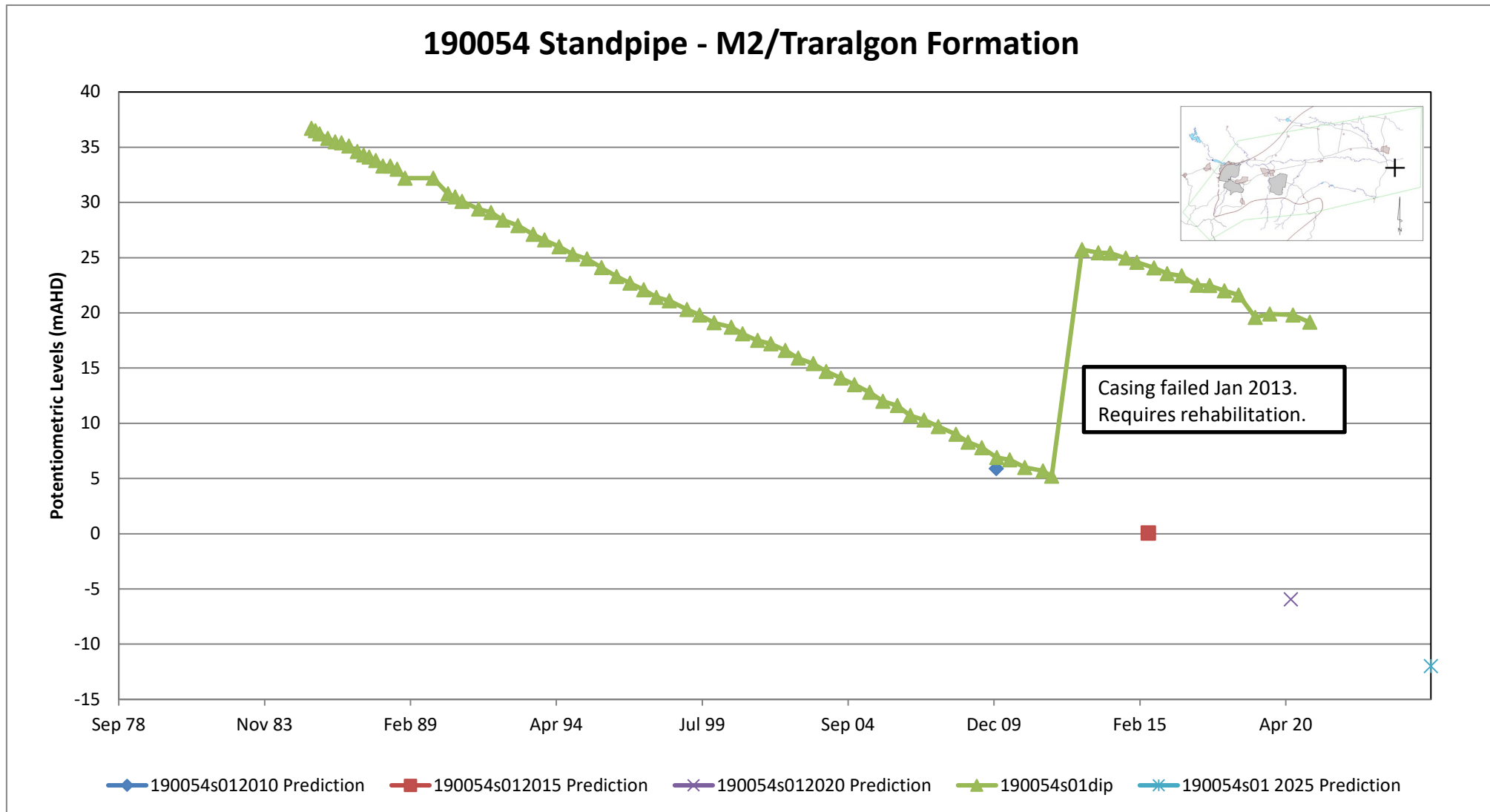
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Appendix E Key Bore Hydrographs

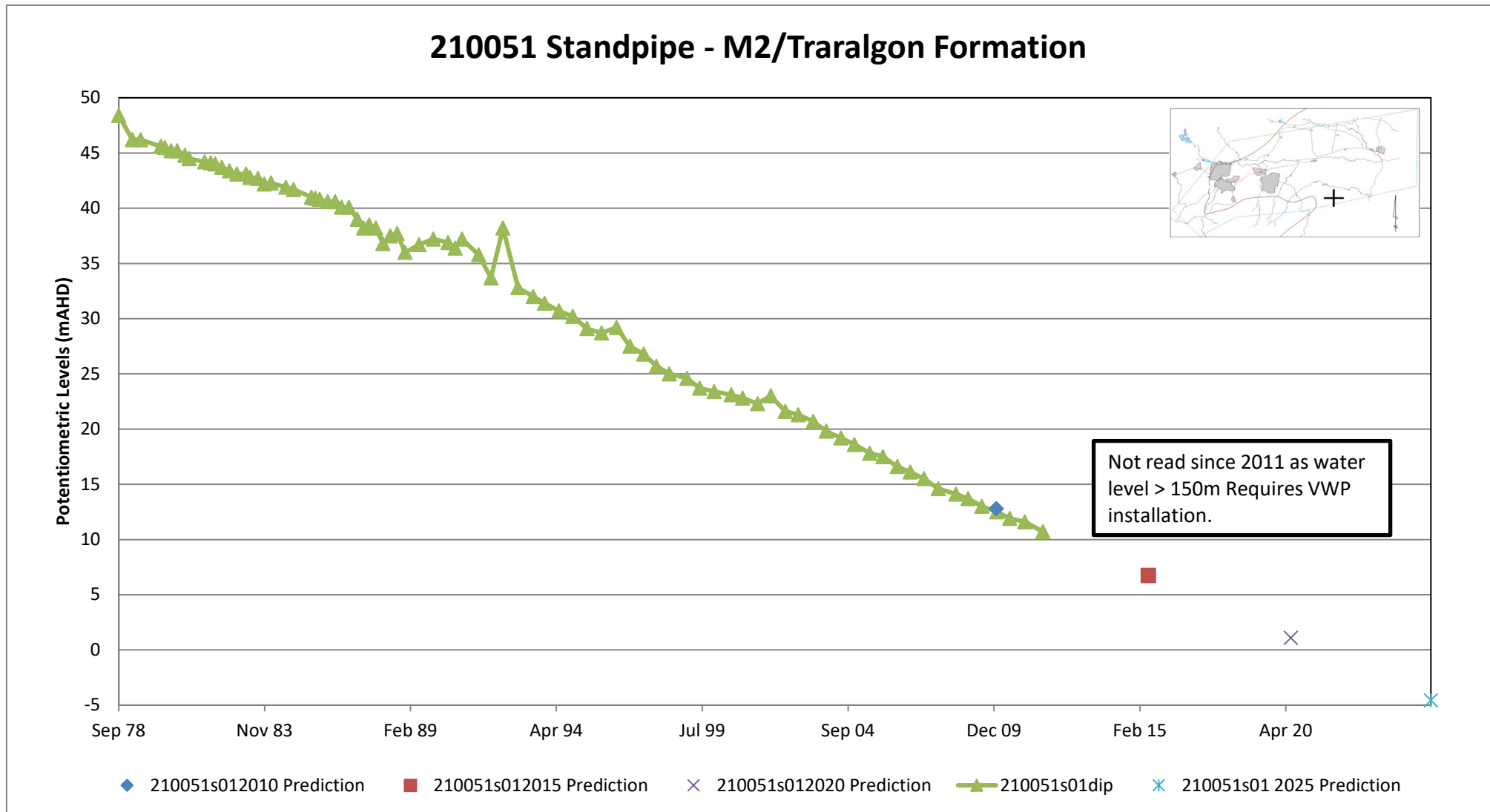
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Appendix E Key Bore Hydrographs

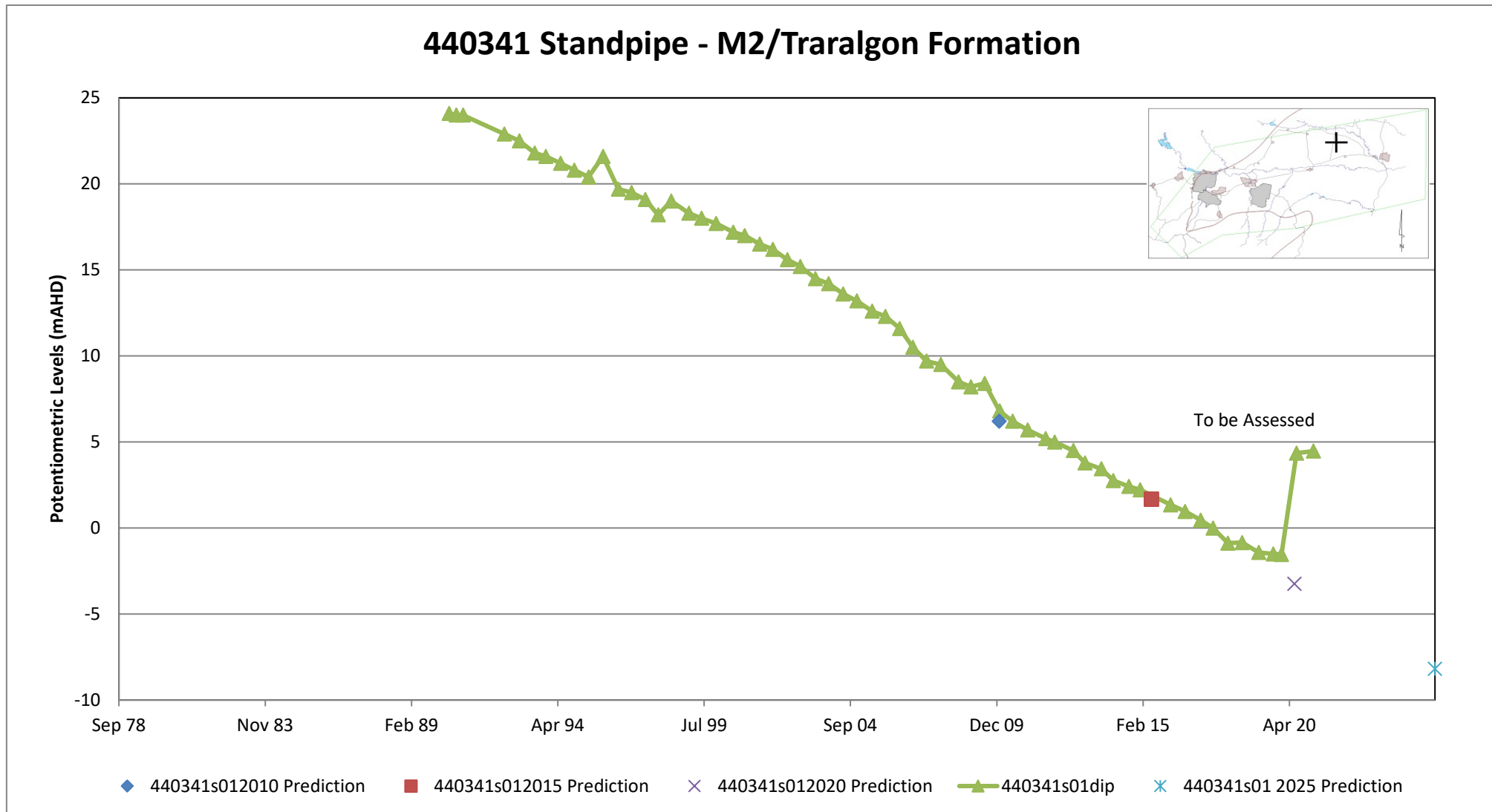
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Appendix E Key Bore Hydrographs

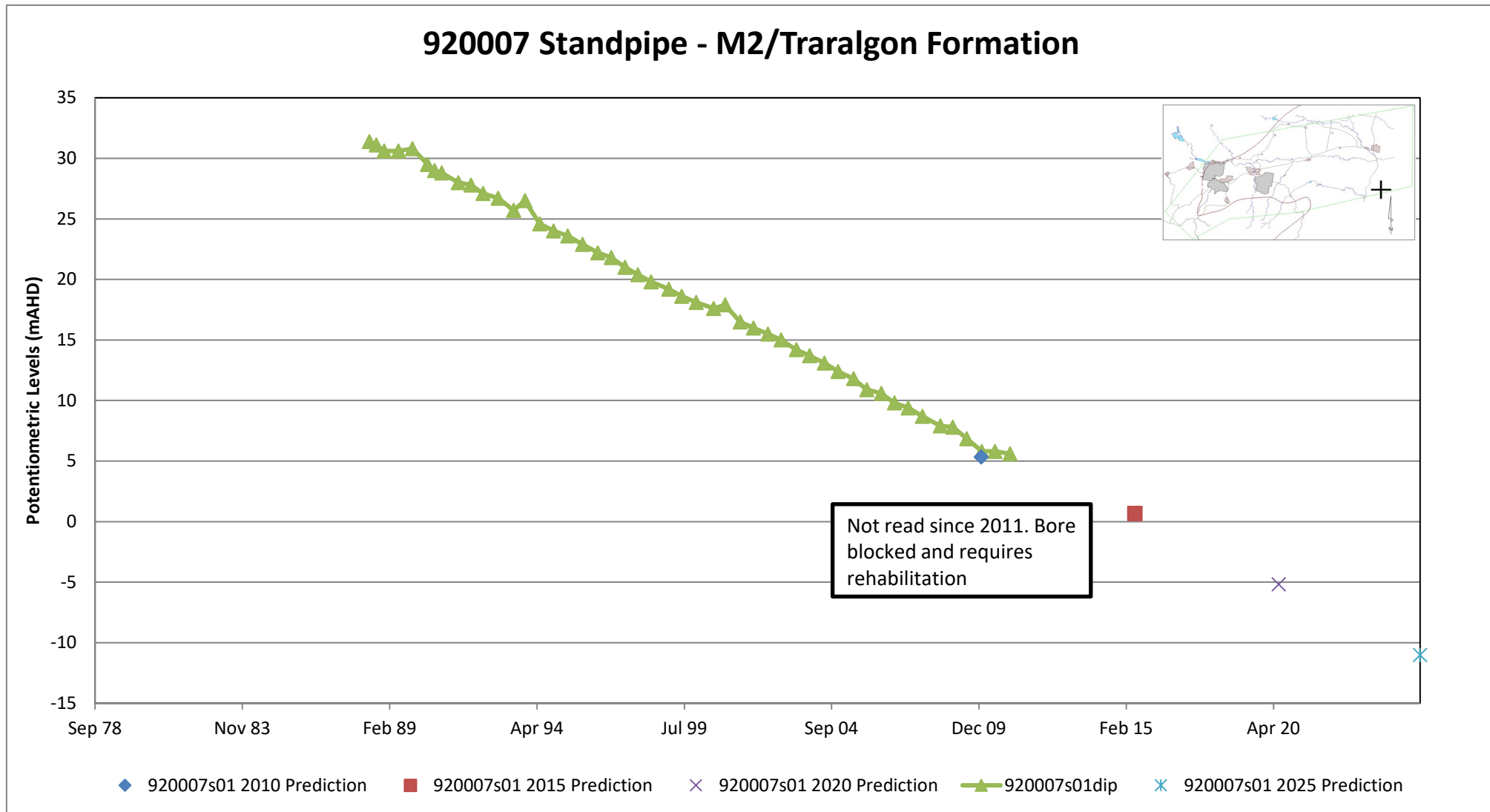
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Appendix E Key Bore Hydrographs

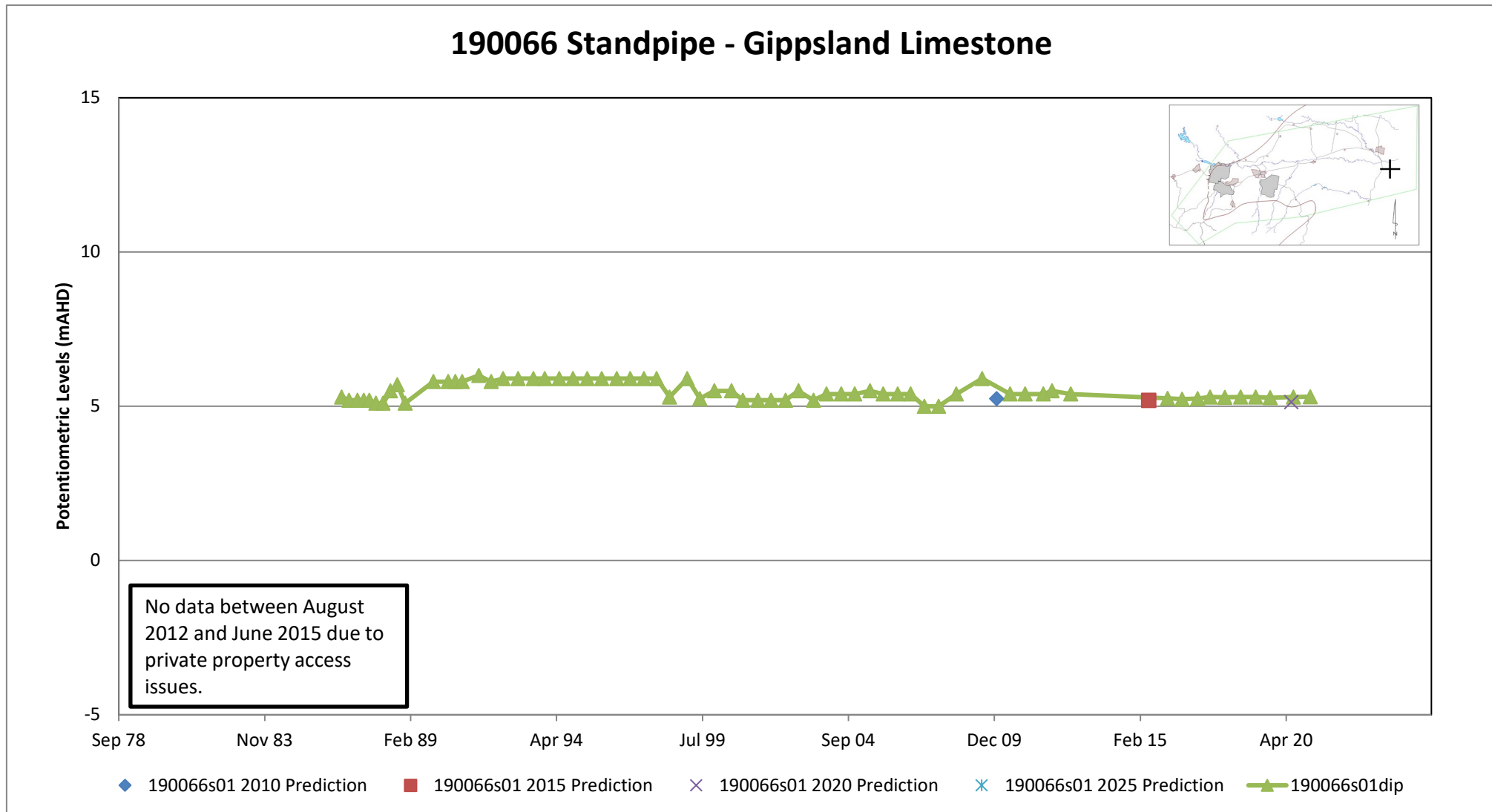
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Appendix E Key Bore Hydrographs

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Appendix F

Annual Asset Maintenance & Reporting Program

Annual Asset Maintenance & Reporting Program

The following tasks are included in the annual work program for aquifer pressure monitoring.

Regional Network Management

1. Review bore hydrographs and other bore information to determine bores which may not be recording accurate aquifer pressures;
2. Confirm bore construction and identify possible causes of reading errors;
3. Priorities the bore rehabilitation work program to rectify identified bore performance problems including specification for bore testing / rehabilitation;
4. Determine bores which are no longer suitable for monitoring;
5. Maintain records of work completed;
6. Review and action as required to ensure overall network performance meets regional monitoring objectives.

Bore Testing / Rehabilitation / Maintenance

1. Undertake a field program to test bores to determine bore performance / integrity and determine required rehabilitation work;
2. Conduct rehabilitation work;
3. Conduct regular work on bore access, bore surface fittings and general maintenance.

Groundwater Level Monitoring

1. Complete aquifer pressure monitoring at scheduled intervals;
2. Report / record maintenance and other work required;
3. Verify and enter data to regional groundwater database and update bore plans and records.

Annual Report

1. Prepare information for annual Latrobe Valley Regional Groundwater and Land Surface Monitoring Report;
2. Compile report.



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