

**ENVIRONMENTAL MANAGEMENT PLAN – EMP**

**FOR**

**UNBLEACHED RICE STRAW PULP MILL (URSP Mill) OF  
NILAR PULP AND PAPER COMPANY LIMITED**

**No. 59, U Shwe Bin Street, Industrial Zone (1), Dagon Seikkan Township,  
Yangon Region, Myanmar**



ရန်ကုန်တိုင်းဒေသကြီး ဒဂုံမြို့သစ် (ဆိပ်ကမ်း) မြို့နယ်၊ စက်မှုဇုန်(၁) ဦးရွှေဘင်လမ်း၊ မြေကွက် အမှတ် (၅၉) တွင် တည်ရှိသော Nilar Pulp and Paper Co., Ltd. ၏ ကောက်ရိုးကို အခြေခံသည့် အရောင်မချွတ်ထားသော ပျော့ဖတ်စက္ကူထုတ်လုပ်သည့် စက်ရုံအတွက်(၂၀၁၈ခုနှစ် ဒီဇင်ဘာလ) ရေးဆွဲတင်ပြခဲ့သော ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် (Environmental Management Plan- EMP) အပေါ် လိုက်နာဆောင်ရွက်ချက်များ

စဉ်	သုံးသပ်အကြံပြုချက်များ	လိုက်နာဆောင်ရွက်ချက်များ
၁။	<p><b>အစီအရင်ခံစာအကျဉ်းချုပ်</b>                      အကျဉ်းချုပ် အစီအရင် ခံစာတွင် အောက်ဖော်ပြပါအချက်များအားထည့်သွင်းဖော်ပြရန်-</p> <ul style="list-style-type: none"> <li>➢ ဒေသဖွံ့ဖြိုးရေးလုပ်ငန်းစီမံချက်အကျဉ်းချုပ်။</li> <li>➢ စာမျက်နှာ(၉) ရေသန့်စင်သည့် စနစ်၏ ဓာတ်ပုံမှတ်တမ်းများနှင့် ပတ်သက်၍ သေချာစွာ ဖော် ပြပေးရန်။</li> <li>➢ စာမျက်နှာ(၂၅) စက်ရုံအနီးရှိ လူမှုပတ်ဝန်းကျင်အခြေအနေနှင့် ပတ်သက်၍ အကျဉ်းချုပ် ဖော်ပြ ပေးရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ အကျဉ်းချုပ်အစီရင်ခံစာ မြန်မာ(၁-၉-၀) တွင် တင်ပြထားပါသည်။</li> <li>➢ ရေသန့်စင်သည့် စနစ်၏ ဓာတ်ပုံမှတ်တမ်းကို ပုံပင်မ စာပိုဒ် (၄-၁၁)တွင် တင်ပြထား ပါသည်။ (၁-၅-၄)တွင် ရေသုံးစွဲမှုနှင့် အရင်းအမြစ်ကို တင်ပြထား ပါသည်။</li> <li>➢ ဒဂုံမြို့သစ်(ဆိပ်ကမ်း) မြို့နယ်၏ ပညာရေး၊ စီးပွားရေး၊ ယဉ်ကျေးမှု ဆိုင်ရာ အချက်အလက်များကို (၁-၆-ဃ) တွင် တင်ပြထား ပါသည်။</li> </ul>
၂။	<p><b>နိဒါန်း</b></p> <ul style="list-style-type: none"> <li>➢ လုပ်ငန်း၏ နောက်ခံ အကြောင်းအရာနှင့်လက် ရှိလည်ပတ် ဆောင်ရွက်နေသည့် နည်းပညာ၊ စီးပွားရေး၊ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာလေ့လာမှုများမှ အဓိကတွေ့ရှိချက်များကို ဖော်ပြ ရန်။</li> <li>➢ လုပ်ငန်းလုပ်ကိုင်သူ၏ အီးမေးလ်၊ Website (EMP) တင်ပြသည့် ရက်စွဲအား ဖော်ပြရန်။</li> <li>➢ ရင်းနှီးမြှုပ်နှံမှု လုပ်ငန်းအမျိုးအစား (SOE, PPP: JV, Leases, Fully Investment) စသည်ဖြင့်ဖော်ပြပေးရန်၊ ရင်းနှီးမြှုပ်နှံမှု အမျိုးပူးပေါင်းဆောင်ရွက်သည့် အဖွဲ့အစည်း နှင့် ပူးပေါင်းဆောင်ရွက်သည့်ကာလဖော်ပြ ရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ လုပ်ငန်း၏ နောက်ခံ အကြောင်းအရာ နှင့်လက် ရှိလည်ပတ် ဆောင်ရွက်နေသည့် နည်းပညာ၊ စီးပွား ရေး၊ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ အချက် အလက် များကို အကျဉ်းချုပ် အစီရင်ခံစာ အပိုဒ် (၁-၁)နှင့် ပင်မအပိုဒ် (၂) တွင် တင်ပြထား ပါသည်။</li> <li>➢ လုပ်ငန်း လုပ်ကိုင်သူ၏ အီးမေးလ်၊ Website (EMP) တင်ပြသည့် ရက်စွဲအား အပိုဒ် (၂-၁) တွင် တင်ပြထားပါသည်။</li> <li>➢ ရင်းနှီးမြှုပ်နှံမှု အမျိုးအစားကို ကုမ္ပဏီပိုင် ဖြစ်ကြောင်းနှင့် ၁၈၂.၈၉ကျပ် သန်းပေါင်း ဖြစ်ကြောင်း အပိုဒ် (၂-၁)တွင် တင်ပြထား ပါသည်။</li> </ul>
၃။	<p><b>မူဝါဒ၊ ဥပဒေနှင့်အဖွဲ့အစည်းဆိုင်ရာမူဘောင်</b>                      -အစီရင်ခံစာတွင် စက်ရုံ၏ ပတ်ဝန်းကျင် ဆိုင်ရာ မူဝါဒနှင့် ဖွဲ့စည်းမှုဆိုင်ရာ စီစဉ်ဆောင်ရွက်မှုများ နှင့် အောက်ဖော်ပြပါ မူဝါဒ၊ ဥပဒေ၊ နည်းဥပ</p>	



	<p>ဒေများအား ထည့်သွင်းဖော်ပြ၍ လိုက်နာဆောင်ရွက်မည် ဖြစ်ကြောင်း ဖော်ပြရန်-</p> <ul style="list-style-type: none"> <li>➢ မြန်မာနိုင်ငံ အမျိုးသား ပတ်ဝန်းကျင် ဆိုင်ရာ မူဝါဒ (၂၀၁၉)</li> <li>➢ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေ (၂၀၁၈)</li> </ul>	<ul style="list-style-type: none"> <li>➢ အကျဉ်းချုပ် အစီရင်ခံစာ (၁-၄-ခ(၁))တွင် လည်းကောင်း၊ ပင်မအပိုဒ် (3-2-1)တွင် လည်းကောင်းတင်ပြထားပါသည်။</li> <li>➢ အကျဉ်းချုပ် အစီရင်ခံစာ (၁-၄-ခ(၂))တွင် လည်းကောင်း၊ ပင်မအပိုဒ် (3-2-2)တွင် လည်းကောင်း တင်ပြထားပါသည်။</li> </ul>
၄။	<p><b>လုပ်ငန်း၏အကြောင်းအရာဖော်ပြချက်</b>  <b>စီမံကိန်းအကြောင်းအရာ ဖော်ပြချက်တွင် အောက်ဖော်ပြပါ အချက်များ ထပ်မံထည့်သွင်း ဖော်ပြရန်-</b></p> <ul style="list-style-type: none"> <li>➢ ကုန်ကြမ်းပစ္စည်းများ သိုလှောင်ခြင်းနှင့် ပတ်သက်၍ အသေးစိတ် ဖော်ပြရန်။</li> <li>➢ စာမျက်နှာ(၁၃၆) ထုတ်လုပ်မှု လုပ်ငန်းစဉ် အဆင့်ဆင့် ပြဿနာအားရှင်းလင်းစွာဖော်ပြရန်။</li> <li>➢ အဆိုင်းအလိုက် လုပ်သား အရေအတွက်အား ဖော်ပြရန်။</li> <li>➢ အစီစီတွင်း အရေအတွက်အား ဖော်ပြရန်၊ ရေ အသုံးပြုမှုအား ဝန်ထမ်းသုံးရေ စသဖြင့် ပမာဏအားခွဲခြား ဖော်ပြရန်။</li> <li>➢ စွန့်ပစ်အမှိုက်များအား မစွန့်ပစ်မီ သိမ်းဆည်းထားရှိမည့် အစီစဉ်နှင့် စွန့်ပစ်မည့် အကြိမ်အရေအတွက် ဖော်ပြရန်။</li> <li>➢ စွန့်ပစ်ရည်များအား စွန့်ထုတ်သည့် နေရာ၊ စွန့်ပစ်ရည်အား သန့်စင်သည့် နည်းစနစ် နှင့် ပြန်လည်အသုံးပြုမည့်အစီအစဉ်အား ရှင်းလင်းစွာ ဖော်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ ကုန်ကြမ်းပစ္စည်းများ သိုလှောင်ခြင်းနှင့် ပတ်သက် ၍ အကျဉ်းချုပ် အစီရင်ခံစာ (၁-၅-c)တွင် ဇယား ဖြင့်လည်းကောင်း၊ ပင်မအပိုဒ် (4-5) ဇယား၊ဓာတ်ပုံ များဖြင့် ဖော်ပြထားပါသည်။</li> <li>➢ ထုတ်လုပ်မှု လုပ်ငန်းစဉ် Production Procedure ကို အပိုဒ်(4-6)တွင် ခြုံငုံ၍ ထုတ်လုပ်မှု နည်းစဉ် ဖော်ပြ ထားပြီး အပိုင်းငယ် သုံးပိုင်းခွဲ၍ ပိုမို ရှင်းလင်း စွာ တင်ပြထားပါသည်။</li> <li>➢ အဆိုင်းအလိုက် လုပ်သား အရေအတွက်ကို အပိုဒ် (4-8)တွင် တင်ပြထား ပါသည်။</li> <li>➢ အစီစီတွင်း အရည်အတွက် (၂)တွင်း နှင့် ရေအသုံး ပြုမှုအလိုက် ဝန်ထမ်းသုံးနှင့် ရုံသုံးရေ ပမာဏများအား အပိုဒ် (4-11)တွင် တင်ပြထားပါသည်။</li> <li>➢ စွန့်ပစ်အမှိုက်များကို အဖုံးပါ အမှိုက်ပုံးများဖြင့် ထိမ်းသိမ်းခြင်း၊ ကွန်ကရစ် လေးဘက် ကာရန် ထားသည့် နေရာတွင် သိုလှောင်ထားခြင်းနှင့် ရက်သတ္တပတ်လျှင် (၂)ကြိမ်-(၃) ကြိမ်ခန့် စွန့်ပစ် ကြောင်း အပိုဒ်(4-13) တွင် တင်ပြထားပါသည်။</li> <li>➢ စွန့်ပစ်ရည်များအား စွန့်ထုတ်သည့် နေရာကို အပိုဒ် (4-15)ပုံ(4-82)တွင်တင်ပြထား ပါသည်။ စွန့်ပစ်ရည် သန့်စင်သည့် စနစ်ကို ပုံ(4-83)တွင် တင်ပြထား ပါသည်။</li> </ul>



	<ul style="list-style-type: none"> <li>လုပ်ငန်းဆောင်ရွက်မှု အဆင့်ဆင့်မှ စွန့်ပစ်ပစ္စည်းများ ထွက်ရှိမှုနှင့် စွန့်ထုတ်မည့် လုပ်ငန်း စဉ် တို့ကို ရှင်းလင်းစွာ ဖော်ပြသည့် ကားချပ် များနှင့် အညွှန်းများ ဖော်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>လုပ်ငန်းဆောင်ရွက်မှု အဆင့်ဆင့်မှ စွန့်ပစ်ပစ္စည်းများ ထွက်ရှိမှုကိုပုံ(4-43)တွင် လည်းကောင်း၊ ပုံ(4-43-A)၊ (4-43-B)နှင့် (4-43-C) တို့တွင် ကားချပ်များတွင် တင်ပြထား ပါသည်။ စွန့်ထုတ် မည့် လုပ်ငန်းစဉ်ကို အပိုဒ် (4-13) တွင် တင်ပြထား ပါသည်။</li> </ul>
၅။	<p><b>လက်ရှိသဘာဝပတ်ဝန်းကျင်နှင့်လူမှုပတ်ဝန်းကျင်အကြောင်းအရာဖော်ပြချက်</b></p> <ul style="list-style-type: none"> <li>အစီရင်ခံစာတွင် စီမံကိန်း အကောင်အထည် ဖော်ဆောင်ရာစက်ရုံသို့သွားရောက်လေ့လာခဲ့သော Baseline Study (survey team) အဖွဲ့ နှင့် စစ်တမ်း ကောက်ယူမှု မှတ်တမ်းအချက် အလက်များအား ဖော်ပြရန်။</li> <li>မြေနမူနာ ကောက်ယူသော နေရာအား ကိုဩဒိနိတ်အမှတ်များဖြင့် ဖော်ပြရန်။</li> <li>ရေနမူနာကောက်ယူသော နေရာအား ကိုဩဒိနိတ်အမှတ်များဖြင့် ဖော်ပြရန်နှင့် အမျိုးသား ပတ်ဝန်းကျင် ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်ပါ ပျော့ဖတ်နှင့်စက္ကူထုတ်လုပ်ခြင်းလုပ်ငန်းများ အတွက် သတ်မှတ် ထားသော ပါရာမီတာများအတိုင်း တိုင်းတာ၍ နှိုင်းယှဉ်ဖော်ပြပေးရန်။</li> <li>လေ အရည်အသွေး တိုင်းတာသော နေရာအားကိုဩဒိနိတ်အမှတ်များဖြင့် ဖော်ပြ ရန် နှင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန် ချက်ပါ သတ်မှတ်ချက်များအတိုင်း လျော့ချရန်။</li> <li>အချက်အလက်ရယူသည့် အရင်းအမြစ်အား ထည့်သွင်း ဖော်ပြရန်။</li> <li>ဆန်းစစ်ခြင်းပြုလုပ်မည့် ပထဝီဆိုင်ရာနယ်ပယ်အတိုင်းအတာသတ်မှတ်ချက်အား ဖော်</li> </ul>	<ul style="list-style-type: none"> <li>စက်ရုံသို့သွားရောက်ခဲ့သည့် မှတ်တမ်းကို အပိုဒ် (5-5)တွင် ဇယား(5-11)ဖြင့် တင်ပြထား ပါသည်။</li> <li>မြေနမူနာ ကောက်ယူသော နေရာအား ကိုဩဒိနိတ်အမှတ်များဖြင့် ပုံ(5-3)တွင် တင်ပြထား ပါ သည်။</li> <li>စွန့်ပစ်ရည် နမူနာကောက်ယူသည့် နေရာ ကိုဩဒိနိတ် အမှတ်များကို ပုံ(6-10-4)တွင် လည်း ကောင်း၊ အစီစီရေနှင့် သောက်ရေနမူနာ ကောက် ယူသည့် နေရာ၏ ကိုဩဒိနိတ် အမှတ် များကို ပုံ(5-7-A)တွင် လည်းကောင်း တင်ပြ ထားပါသည်။ စွန့်ပစ်ရည်၏ ဓာတ်ခွဲရလဒ် များ နှင့် NEQ(E)G စံနှုန်း တို့ နှိုင်းယှဉ်ချက်ကို အပိုဒ် (6-4-2)တွင်ဇယားများဖြင့်တင်ပြထား ပါသည်။</li> <li>ပတ်ဝန်းကျင် လေထု အရည်အသွေး တိုင်းတာ သည့် နေရာ ဖော်ပြချက်ကို ပုံ(5-9)ဖြင့် လည်း ကောင်း၊ လုပ်ငန်းခွင်လေအရည်အသွေးကို (5-11) ဖြင့်တင်ပြထားပါသည်။ အမျိုးသား ပတ်ဝန်း ကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု)များ အတိုင်းဖြစ်ရန် EMP တွင်ပါရှိသည့် နည်းများဖြင့် ဆောင်ရွက်ပါသည်။</li> <li>ဒေသဆိုင်ရာအချက်အလက် ရယူသည့် အရင်း အမြစ်အဖြစ် ဒဂုံမြို့သစ်(ဆိပ်ကမ်း)မြို့နယ် အ ထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာနမှ ရယူကြောင်း အပိုဒ်(5-0)တွင်တင်ပြထား ပါသည်။</li> <li>ဆန်းစစ်ခြင်း ပြုလုပ်မည့် ပထဝီ ဆိုင်ရာ နယ်ပယ် အတိုင်းအတာ သတ်မှတ်ချက်ကို</li> </ul>





	ပြရန်။	အပိုဒ် (5-1)တွင် တင်ပြထား ပါသည်။
၆။	<p><b>ပတ်ဝန်းကျင်အပေါ်သတ်ရောက်မှုများနှင့်လျော့နည်းစေရန်ဆောင်ရွက်မည့်လုပ်ငန်းများ</b>  <b>လျော့နည်းစေရန်ဆောင်ရွက်မည့်လုပ်ငန်းများ</b></p> <ul style="list-style-type: none"> <li>➢ Combustion Chamber တွင်မီးရှို့ရာမှ ထွက်ရှိ မည့် မီးခိုးငွေ့များနှင့် ပတ်သက်၍ ဆောင်ရွက် မည့် အစီအစဉ်အား ဖော်ပြရန်။</li> <li>➢ Double steps catch all system နှင့်ပတ်သက် ၍ ရှင်းလင်းဖော်ပြ ပေးရန်။</li> <li>➢ စာမျက်နှာ(၂၀၉)တွင် စွန့်ပစ်ရည် နမူနာ ကောက်ယူသည့် နေရာပြ ပုံအား ကိုဩဒီနိတ် အမှတ်များဖြင့် ဖော်ပြရန်၊ စာမျက်နှာ (၂၁၀)နှင့် (၂၁၁)တွင် စွန့်ပစ်ရည်၏ ဓာတ်ခွဲရလဒ် အဖြေ များ ဖော်ပြထားရာ မည့်သည့် နေရာမှ ကောက်ယူထားကြောင်း ရှင်းလင်းစွာဖော်ပြပေးရန်နှင့်အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်ပါ ပျော့ဖတ်နှင့် စက္ကူထုတ်လုပ်ခြင်းလုပ်ငန်းများအတွက် သတ်မှတ်ထားသော ပါရာမီတာများ အတိုင်း ဓာတ်ခွဲ ခန်း ရလဒ်အဖြေများအား အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်နှင့် တကွ နှိုင်းယှဉ် ဖော်ပြရန်။</li> <li>➢ လုပ်ငန်းခွင်အတွင်း လေအဝင် အထွက် ကောင်းမွန် စေရန်နှင့်အလင်းလုံ လောက်စွာ ရရှိစေရန် ဆောင်ရွက်ထားရှိမှုအား ဖော်ပြရန်။</li> <li>➢ ထိခိုက်မှုအားလျော့ချပြီးပါက ရရှိမည့်ရလဒ်များအား ဖော်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ Combustion Chamber တွင်မီးရှို့ရာမှ ထွက်ရှိ မည့် မီးခိုးငွေ့များနှင့် ပတ်သက်၍ အပိုဒ်(6-4-1-(a))တွင် တင်ပြထား ပါသည်။</li> <li>➢ Double steps catch all system နှင့်ပတ်သက် ၍ အပိုဒ် (6-4-1-(a))တွင် တင်ပြထား ပါသည်။</li> <li>➢ စာမျက်နှာ(၂၀၉) (ဒီဇင်ဘာလ တင်ပြသည့် အစီရင်ခံစာ) ယခု ပြင်ဆင်တင်ပြခြင်း (၁၁)တွင် ပုံ(6-10-4)တွင်ကိုဩဒီနိတ်များဖြင့် တင်ပြထား ပါသည်။ညွှန်ကြားထားသည့် အတိုင်း Parameter များအားလုံး တိုင်းတာရန် (၂၀၂၀) ဇန်နဝါရီလ (၁၆)ရက်တွင် နမူနာ ထပ်မံရာယူ တိုင်းတာခဲ့ပြီး ရလဒ်များကို NEQ(E)G guideline နှင့်နှိုင်းယှဉ် ဖော်ပြ ထားကြောင်း အပိုဒ်(6-4-2) တွင် ယခင်အဟောင်းများပါ တွဲလျက် တင်ပြထားပါသည်။</li> <li>➢ လုပ်ငန်းခွင်အတွင်း လေအဝင် အထွက် ကောင်း မွန် စေရန်နှင့်အလင်းလုံ လောက်စွာ ရရှိစေရန်ဆောင်ရွက်ထားရှိမှုကို အပိုဒ်(6-7) တွင် တင်ပြ ထားပါသည်။</li> <li>➢ ထိခိုက်မှုအားလျော့ချပြီးပါက ရရှိမည့်ရလဒ်များ Matrix စနစ်ဖြင့် တွက်ချက်ပြီး အပိုဒ်(၆-၅)တွင် တင်ပြထား ပါသည်။</li> </ul>
၇။	<p><b>ဒေသခံပြည်သူများနှင့်တိုင်းပင်ဆွေးနွေးခြင်းနှင့်ဖွံ့ဖြိုးရေးအစီအစဉ်</b>  <b>ဒေသခံပြည်သူများနှင့် တိုင်ပင်ဆွေးနွေးခြင်းနှင့် ဖွံ့ဖြိုးရေးအစီအစဉ်တွင် အောက်ပါအချက်များ ထည့်သွင်းဖော်ပြရန်-</b></p> <ul style="list-style-type: none"> <li>➢ အများပြည်သူနှင့် တိုင်ပင် ဆွေးနွေးသည့် အကြောင်းအရာ များအား ဖော်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးသည့် အကြောင်းအရာများကို အပိုဒ်(8-2)တွင် တင်ပြ</li> </ul>



	<ul style="list-style-type: none"> <li>➢ အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်း/သတင်းအချက်အလက်ထုတ်ပြန်ခြင်း (Disclosure)ကိုလိုအပ်ချက်နှင့်အညီ အချိန်အခါအလိုက် ဆောင်ရွက်သွားမည့် အစီအစဉ်ကိုဖော်ပြရန်။</li> <li>➢ ထိခိုက်ခံစားရသည့် ဒေသခံ ပြည်သူများ၊ ဌာန ဆိုင်ရာ အဖွဲ့အစည်းများ၊ အစိုးရ မဟုတ်သော အဖွဲ့အစည်းများ၏ အကြံပြုချက်၊ လိုလား တောင်းဆို ချက်များ၊ အရေးယူ ဆောင်ရွက်ပြီး စီမံနှင့် အရေးယူ ဆောင်ရွက်မည့် အစီအစဉ် အား ဖော်ပြရန်။</li> <li>➢ လုပ်ငန်းကြောင့် ထိခိုက် ခံစားရသည့် ဒေသခံ ပြည်သူ တို့အတွက် ဒေသဖွံ့ဖြိုးရေး ဆောင် ရွက်မည့် အစီအစဉ်နှင့် အသုံးပြုမည့် ရန်ပုံငွေလျာထား ချက်များ အား ဖော်ပြရန်။</li> </ul>	<p>ထားပါသည်။</p> <ul style="list-style-type: none"> <li>➢ အများပြည်သူနှင့် တိုင်ပင်ဆွေးနွေးခြင်း/သတင်း အချက်အလက် ထုတ်ပြန်ခြင်းကို (10-1-11-(a))တွင် ရပ်မိရပ်ဖ ကိုယ်စား လှယ် ပါဝင်သည့် အဖွဲ့ဖွဲ့စည်းပြီး ဆက်သွယ် ညှိနှိုင်း ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။</li> <li>➢ (၁၉-၂၀၁၈)ရက် အများပြည်သူနှင့် တိုင်ပင် ဆွေးနွေးသည့် အစည်းအဝေးတွင် စက်ရုံ တာဝန်ခံနှင့် မိတ်ဆက်ခြင်း၊ ဆက်သွယ်ရမည့် ဖုန်းနံပါတ်များ၊ ရပ်ကွက် အုပ်ချုပ်ရေးမှူး များနှင့် ရယူခြင်းဖြင့် ဆက်သွယ် ဆောင်ရွက် နိုင်မည် ဖြစ်ပါသည်။ ဆောင်ရွက်မည့် အစီအစဉ်များကို နောက်ဆက် တွဲ(၅) တွင် တင်ပြထား ပါသည်။</li> <li>➢ ဒေသခံပြည်သူများ အတွက် ဖွံ့ဖြိုးရေး လုပ်ကိုင် ဆောင်ရွက်ပေးသည့် လုပ်ငန်းများကို အပိုဒ် (၈-၅)တွင် တင်ပြထားပြီး အသုံးပြုမည့် ရန်ပုံငွေ ကို နှစ်စဉ် အသားတင် အမြတ်ငွေ၏ ၂%ကို သုံးစွဲ ဆောင်ရွက် သွားမည်ဖြစ်ကြောင်း အပိုဒ် (၈-၆) တွင် တင်ပြထားပါသည်။</li> </ul>
၈။	<p><b>ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်</b></p> <p><b>က</b></p> <ul style="list-style-type: none"> <li>➢ လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်နှင့်စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်အား အကောင်အထည် ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်းတွင် ပါဝင်မည့် ပုဂ္ဂိုလ်များ၏ အမည်အားဖော်ပြရန်။</li> <li>➢ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အား အကောင် အထည်ဖော် ဆောင်ရွက်ရန် ရန်ပုံငွေ လျာ ထားချက် လုံလောက်မှု မရှိပါက ထပ်မံ ဖြည့်စွက်မည် ဖြစ်ကြောင်း ဖော်ပြရန်။</li> </ul> <p><b>ခ</b></p> <ul style="list-style-type: none"> <li>➢ ဝန်ထမ်းများကျန်းမာရေးစောင့်ရှောက်မှု အတွက်ပုံမှန်ဆောင်ရွက်ထားရှိမည့် အစီအစဉ်တို့အား ထည့်သွင်းဖော်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်နှင့်စောင့်ကြပ်ကြည့်ရှုမည့်အစီအစဉ်အား အကောင်အထည် ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်း တွင် ပါဝင်မည့် ပုဂ္ဂိုလ်များကို အပိုဒ် (10-1-1)တွင် တင်ပြထား ပါသည်။</li> <li>➢ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အား အကောင် အထည်ဖော်ဆောင်ရွက်ရန် ရန်ပုံငွေလျာထားချက် လုံလောက်မှု မရှိပါက ထပ်မံ ဖြည့်စွက်မည် ဖြစ်ကြောင်းကို အပိုဒ် (10-2) တွင် တင်ပြထားပါသည်။</li> <li>➢ ဝန်ထမ်းများကျန်းမာရေး စောင့်ရှောက်မှု အတွက် အပိုဒ်(၈-၅)တွင် လူမှုရေး ဆောင်ရွက် ချက်များ၊ အပိုဒ် (10-1-3)တွင် accident အစီရင်ခံစာများ၊ အရေးပေါ်စီမံချက် ရေးဆွဲ မှုများ၊ အပိုဒ် (10-1-11)တွင် ဝန်ထမ်းကျန်းမာ ရေး ရန်ပုံငွေများ ထည့် သွင်း ရေးဆွဲခြင်း တို့ဖြင့် ဆောင်ရွက်လျက်ရှိကြောင်းတင်ပြထားပါသည်။</li> </ul>



<p>ဂ ဃ</p>	<ul style="list-style-type: none"> <li>➢ သဘောထားမှတ်ချက်ပေးရန်မရှိပါ။</li> <li>➢ EMP အစီရင်ခံစာကို လုပ်ငန်းပိုင်ရှင်မှ အောက် ပါ ကထိကဝတ် များကို လက်မှတ်ရေးထိုး ထား သည့် အတည်ပြု ဝန်ခံချက် ပူးတွဲတင်ပြရန်။</li> <li>➢ စက်ရုံ ပိတ်သိမ်းမည် ဆိုပါက ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာမထိခိုက်စေရန် အစီအစဉ်များချမှတ် ဆောင်ရွက် မည်ဖြစ်ကြောင်း။</li> <li>➢ ဒေသခံပြည်သူ ချိတ်ဆက်ပါဝင်ရေးနှင့် ဒေသဖွံ့ဖြိုးရေးအား ဖော်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ ဆောင်ရွက်ပါမည်။</li> <li>➢ စက်ရုံပိတ်သိမ်းမည်ဆိုပါက ပတ်ဝန်းကျင်နှင့် လူမှု ရေးဆိုင်ရာ ထိခိုက်မှု လျော့နည်းစေရန် အခန်း (၉)တွင် သီးခြားတင်ပြထားပြီး အခန်း (10-2) တွင် ကထိကဝတ်များ ကိုတင်ပြထားပါသည်။</li> <li>➢ ဒေသခံပြည်သူ ချိတ်ဆက်ပါဝင်ရေး အတွက် စောင့်ကြပ်ကြည့်ရှုရေး အဖွဲ့တွင် ပါဝင်နိုင်ရန် အပိုဒ် (10-11-1(a)) တွင် ဆောင်ရွက်ထားပါသည်။</li> </ul>
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<p>၁၀။</p>	<p><b>အထွေထွေ</b></p> <ul style="list-style-type: none"> <li>➢ အစီရင်ခံစာတွင် ယခုပေးပို့သော အကြံပြုချက် တစ်ခုချင်းစီအလိုက် ဖြေရှင်းချက်များကို အစီရင်ခံစာ၏ မည်သည့်အပိုင်းတွင် ရေးသားထားသည်ကိုဖော်ပြသည့် (Comment Responses Table) ကိုဖော်ပြပေးရန်။</li> <li>➢ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို ပတ်ဝန်း ကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ထုံး လုပ် နည်းအပိုဒ် (၆၃)(ဇ) ပါ အစီအစဉ်အတိုင်း ရေးသားတင်ပြရန်။</li> </ul>	<ul style="list-style-type: none"> <li>➢ ညွှန်ကြားချက် အတိုင်းသီးခြား အစီရင်ခံစာတင်ပြထားပါသည်။</li> <li>➢ ညွှန်ကြားချက်နှင့်အညီရေးဆွဲ တင်ပြထားပါသည်။</li> </ul>

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**ABBREVIATIONS**

APHA-AWWA-WPCF	-	American Public Health Association-American Water Works Association-Water Pollution Control Federation
BOD	-	Biochemical Oxygen Demand
°C	-	Degree Celsius
cmol/kg soil	-	Centimole per kilogram of soil
CO	-	Carbon monoxide
COD	-	Chemical Oxygen Demand
CO <sub>2</sub>	-	Carbon Dioxide
CSR	-	Corporate Social Responsibility
dB(A)	-	Decibel (measured with A-weighted)
EPA	-	Environmental Protection Agency
E	-	East
°F	-	Degree Fahrenheit
g	-	Gram
GHG	-	Green House Gas
GMES	-	Green Myanmar Environmental Services Co., Ltd.
g/kg soil	-	gram per kilogram of soil
H.D	-	High Density Cleaner
in	-	inch
IS	-	Indian Specification
kg	-	Kilogram
kg/ADt	-	kilogram per borne air dry ton



km	-	Kilometer
kmh	-	Kilometer per hour
kVA	-	Kilo Volt Ampere
kW	-	Kilowatt
kWh	-	Kilowatt hour
L	-	Liter
L <sub>eq</sub>	-	Equivalent Sound Level
mg	-	Milligram
mg/L	-	Milligram per Liter
mg/kg soil	-	Milligram per kilogram of soil
µg/Nm <sup>3</sup>	-	Microgram per Normal cubic meter
mm	-	Millimeter
mmol/L extract	-	Millimole per Liter of Extract
MPa	-	Mega Pascal
mph	-	Mile per hour
N	-	North
NEQ(E)G	-	National Environmental Quality (Emission) Guidelines
NO <sub>2</sub>	-	Nitrogen Dioxide
NO <sub>x</sub>	-	Nitrogen Oxide
NTU	-	Nephelometric Turbidity Unit
O <sub>2</sub>	-	Oxygen
O <sub>3</sub>	-	Ozone
pH	-	Potential of Hydrogen ion





PM	-	Particulate Matter
PM <sub>2.5</sub>	-	Particulate Matter 2.5 micrometer or less in diameter
PM <sub>10</sub>	-	Particulate Matter 10 micrometer or less in diameter
PPE	-	Personal Protection Equipment
ppm	-	Parts per million
Pulp	-	Pulp is a lingo celluloses fibrous material prepared by chemically or mechanically separating cellulose fibers from wood, fiber crops, waste papers or rags.
S	-	South
SO <sub>2</sub>	-	Sulfur Dioxide
SO <sub>x</sub>	-	Sulfur Oxide
TDS	-	Total Dissolved Solids
TSS	-	Total Suspended Solids
TVOC	-	Total Volatile Organic Compound
URSP	-	Unbleached Rice Straw Pulp
W	-	West
WHO	-	World Health Organization



**DEFINITIONS OF TECHNICAL TERMS**

Bale	- Solid compressed stock of pulp or paper sheets
Bleaching	- It is process for breaking the color lignin, a natural substance found formed in tree, away from the pulp to leave white cellulose in paper making process
BOD <sub>5</sub>	- Amount of dissolved oxygen consumed in five days by biochemical reaction of microorganisms breaking down organic matter in pulp and paper mill effluent
Cellulose	- Chief substance in walls of plants used to manufacture pulp
Chest	- Vessel equipped with agitating device for storing, collecting, mixing and/or chemical treatment of pulp suspension. A large vessel fitted with an agitator for storing pulp stock
COD	- The amount of oxygen needed to oxidize all organic substances in pulp and paper mill effluent
Cutter	- Machine for converting paper from the reel to specific sheet size
Digester	- Pressure vessel used to chemically treat rice straw chips and other cellulose fibrous matters such as straw, bagasse, rage, etc., under elevated temperature and pressure in order to separate fibers and produce pulp
Hydropulper	- A metal tank fitted with an agitation motor for disintegrating pulp and broke in water
kg/ADt	- Kilogram oxygen consumed for producing borne air dry ton pulp e.g., BOD, or COD
PLt	- Platform
PLt-1	- Level of classroom which has radio-cassette only
PLt-2	- Level of classroom which has radio-cassette and television
PLt-3	- Level of classroom which has radio-cassette, television and computer



**DOCUMENT CERTIFICATION AND COMMITMENT**

This Environmental Management Plan (EMP) report has been prepared by Green Myanmar Environmental Services Co., Ltd. I, factory manager of **Nilar Pulp and Paper Co., Ltd (URSP Mill)**, **U Tin Aung Moe**, the undersigned certify that

1. The particulars in this report are correct and true;
2. This report has been written by following the relevant legislations of Ministry of Environmental Conservation and Forestry [Ministry of Natural Resources and Environmental Conservation] and these legislations in this report have been followed exactly;
3. The commitments, the impacts reducing procedure to the environment and the plans have been complied fully and always;
4. According to the improved technologies, approved Environmental Management Plan for current condition will be edited to fill by the instruction;
5. If intended budget amounts of decommissioning, mitigation measures of current situation and environmental management plan are not sufficient in usage, extra allotment should be planned;
6. The laws, regulations, policies of state facts under permits, certificates and regulations are conducted.

Factory Manager

**Nilar Pulp and Paper Co., Ltd (URSP Mill)**

**No.59, U Shwe Bin Street, Industrial Zone (1),  
Dagon Seikkan Township, Yangon Region, Myanmar**

Signature : .....

Name : .....

Designation : .....

Date : .....



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**ACKNOWLEDGEMENT AND COMMITMENT**

In Environmental Management Plan (EMP) is a procedure that identifies, describes, evaluates and develop means of mitigation potential impacts of a proposed activity on the environment.

This EMP report was prepared using information from the following sources review of selected literature, reports, and advisories, meetings with several interested parties, personal consultation with several persons (mainly person, employee, supervisor of plant), the experience of EMP team; and other information solicited from the baseline data and stakeholders. We strongly commit that this report was prepared in compliance with Myanmar Environmental Laws and Regulation.

The EMP team is grateful to the project proponent - **Nilar Pulp and Paper Co., Ltd (URSP Mill)** for commissioning to conduct this Environmental Management Plan report in request of the proposed project. We would like to further acknowledge with great appreciation all those neighbors who participated in the public consultation process for their cooperation throughout the exercise.

We further acknowledge the support, either direct or indirect, for the various parties who assisted the EMP team towards the successful completion of this project.

Green Myanmar Environmental Services Co., Ltd.

Signature : .....

Name : U Kyaw Soe Win

Designation : Managing Director

Date : .....



## ၁။ အစီရင်ခံစာအကျဉ်းချုပ်

### ၁-၁။ နိဒါန်း

Nilar Pulp and Paper Co., Ltd (URSP Mill) သည် ကောက်ရိုးကို အခြေခံ ကုန်ကြမ်း အဖြစ် အသုံးပြုပြီး ပျော့ဖတ်စက္ကူ ထုတ်လုပ်သော စက်ရုံဖြစ်ပါသည်။ တစ်နှစ်လျှင် ပျော့ဖတ်စက္ကူ ၁၃၅၀တန်ခန့် ထုတ်လုပ် နိုင်ပြီး အမှတ် (၅၉)၊ ဦးရွှေဘင်လမ်း၊ စက်မှုဇုန်(၁)၊ ဒဂုံဆိပ်ကမ်းမြို့နယ်၊ ရန်ကုန်တိုင်း ဒေသကြီးတွင် တည်ရှိ ပါသည်။ အဆို ပါစက်ရုံကို (၂၀၀၃) ခုနှစ်တွင် စတင် တည်ဆောက်ခဲ့ပြီး စက်ပစ္စည်း များကို မြန်မာပညာရှင် များဖြင့် ပြည်တွင်းမှာပင် ထုတ်လုပ် တပ်ဆင် ခဲ့ပါသည်။ ထုတ်လုပ်ရန် မလွယ်ကူသော စက်ပစ္စည်း များကို ပြည်တွင်း မှာပင် အသုံးပြု၍ ရသော နိုင်ငံခြားဖြစ် စက်ပစ္စည်း များကို ဝယ်ယူ အသုံးပြု ခဲ့ပါသည်။

စက်ရုံ၏ ရည်ရွယ်ချက်များမှာ-

- (က) စိုက်ပျိုးရေး ကဏ္ဍမှ ဘေးထွက် ပစ္စည်း ဖြစ်သော ပေါများသည့် ကောက်ရိုးကို ကုန်ကြမ်း အဖြစ်အသုံးပြုရန်
- (ခ) နိုင်ငံခြားငွေရှာဖွေရန်
- (ဂ) နိုင်ငံတော်အခွန်အခရရှိစေရန်
- (ဃ) ပြည်တွင်းအလုပ်အကိုင်အခွင့်အလမ်းရရှိစေရန်

တို့ဖြစ်ပါသည်။

ထုတ်လုပ်သည့် နည်းပညာမှာ ကောက်ရိုး များကို သန့်စင်၊ ခုတ်ထစ်ပြီး ကော့စတစ် ဆိုဒါပျော်ရည်နှင့် ကျိုချက်အိုး အတွင်း ရေနွေးငွေ့ဖြင့် ကျိုချက်ခြင်းဖြင့် ကောက်ရိုးတွင် ပါဝင်သော ဆယ်လူလို(စ်) အမျှင်များကို ခွဲထုတ်ပြီး ပျော့ဖတ် စက္ကူ ထုတ်လုပ်ခြင်း ဖြစ်ပါသည်။ ကွဲထွက် လာသော ဆယ်လူလို(စ်) အမျှင်များကို ရေဆေးခြင်း၊ အရွယ်အစားခွဲခြင်း၊ အပူရိုလာများဖြင့် ဖိသိပ်ခြင်းဖြင့် ပျော့ဖတ် စက္ကူ ရရှိပါသည်။

စက်ရုံတည်ရှိသည့် ဒဂုံဆိပ်ကမ်း မြို့နယ်၏ လူမှုရေး အချက်အလက် များကို အောက်ပါ အတိုင်း တင်ပြ ထားပါသည်။

### ပညာရေး

အဆင့်မြင့် ပညာအဆင့် အဖြစ် 'တိုင်းရင်းသားလူငယ် လူ့စွမ်းအား အရင်းအမြစ် ဖွံ့ဖြိုးရေး' ဒီဂရီ ကောလိပ်၊ အခြေခံပညာ အထက်တန်း ကျောင်း(၃)ကျောင်း၊ အခြေခံပညာ အလယ်တန်း ကျောင်း(၄)



ကျောင်း၊ အခြေခံပညာ မူလတန်း ကျောင်း(၁၁)ကျောင်း၊ သူနာပြု ကျောင်း(၁)ကျောင်း၊ ဘုန်းတော်ကြီး သင်ပညာရေး ကျောင်း(၈)ကျောင်း ရှိပါသည်။

**စီးပွားရေး**

ဒဂုံမြို့သစ် (ဆိပ်ကမ်း) မြို့နယ်သည် ရန်ကုန်တိုင်း ဒေသကြီးအတွင်း တည်ရှိပြီး စက်မှုဇုန် (၂) ဇုန်၊ စပါးစိုက်ပျိုးခြင်းနှင့် မော်တော်ယာဉ် လုပ်ငန်းများ ဖွံ့ဖြိုးပါသည်။ စက်မှုဇုန် (၁) တွင် စက်မှုလုပ်ငန်း (၇၅) ခု၊ ဇုန် (၂) တွင် (၂၈) လုပ်ငန်းရှိပြီး အိမ်တွင်း စက်မှုလုပ်ငန်း (၂၁၁) ခု ရှိပါသည်။

**ယဉ်ကျေးမှု**

ထင်ရှားသည့် ဘုရားပုထိုး၊ ဘုန်းတော်ကြီး ကျောင်းနှင့် အခြား ဘာသာရေး အဆောက်အဦများ မရှိပါ။

**၁-၂။ လုပ်ငန်း၏အချက်အလက်များအကျဉ်း**

လုပ်ငန်းပိုင်ရှင်	ဒေါ်စန်းမြင့် (ဒါရိုက်တာ)
ပိုင်ဆိုင်မှုအမျိုးအစား	ကုမ္ပဏီ
နိုင်ငံသားစိစစ်ရေးကတ်ပြားအမှတ်	၁၂/ပဘတ(နိုင်)၀၂၀၀၇၂
ရင်းနှီးမြှုပ်နှံမှုတန်ဖိုး	၁၈၂.၈၉ ကျပ်သန်း
ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် တာဝန်ခံမည့်ပုဂ္ဂိုလ်	ဦးတင်အောင်မိုး စက်ရုံမန်နေဂျာ ၀၉-၉၇၇၂၁၂၀၁၃

လုပ်ငန်းစက်ရုံ၏အသေးစိတ်အချက်အလက်များကို အပိုဒ် (၂-၁) တွင်တင်ပြထားပါသည်။

**၁-၃။ အစီရင်ခံစာရေးသားပြုစုသည့်အဖွဲ့အစည်း၏အချက်အလက်များ**

အမည်	Green Myanmar Environmental Services Co., Ltd. စိမ်းလန်းမြန်မာပတ်ဝန်းကျင်ဆိုင်ရာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်
ကုမ္ပဏီမှတ်ပုံတင်	Registration No. 110299931 [အမှတ်၂၇၄၄/၂၀၁၂-၂၀၁၃]
ကုမ္ပဏီလိပ်စာ	အမှတ် (၁၁၅) ၊ ကနောင်မင်းသားကြီးလမ်း၊ လှိုင်သာယာစက်မှုဇုန် (၁)၊ လှိုင်သာယာစက်မှုမြို့၊ ရန်ကုန်တိုင်းဒေသကြီး။
ဆက်သွယ်ရန်ဖုန်းနံပါတ်	၀၉-၈၉၇၉၇၈၂၉၆
အီးမေးလိပ်စာ	<a href="mailto:gmescompany@gmail.com">gmescompany@gmail.com</a> , <a href="mailto:info@gmes-mm.com">info@gmes-mm.com</a>



အသေးစိတ် အချက်အလက်ကို အပိုဒ် (၂-၂) တွင် GMES-EMP-Team ၊ ကုမ္ပဏီ မှတ်ပုံတင် လက်မှတ်၊ ကြားကာလ အကြံပေး လုပ်ကိုင်သူ မှတ်ပုံတင်ခြင်း အထောက်အထား လက်မှတ်၊ ကုမ္ပဏီ၊ လူပုဂ္ဂိုလ် (၇) ဦးတို့၏ လက်မှတ်များကို တင်ပြ ထားပါသည်။

**၁-၄။ မူဝါဒ၊ ဥပဒေ၊ မူဘောင်များနှင့်ဖွဲ့စည်းမှုဆိုင်ရာများ**

မူဝါဒ၊ ဥပဒေ၊ မူဘောင်များနှင့် ဖွဲ့စည်းမှု ဆိုင်ရာများကို အောက်ပါ အတိုင်း အပိုဒ် (၄) ပိုင်း ခွဲခြားထား ပါသည်။

၁-၄-က။ Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ၏ ပတ်ဝန်းကျင်၊ ထုတ်ကုန် ပစ္စည်းများ ထုတ်လုပ်ခြင်း များနှင့် စပ်လျဉ်းသည့် မူဝါဒ၊ ဥပဒေ၊ မူဘောင်များနှင့် ဖွဲ့စည်းမှု ဆိုင်ရာများ

၁-၄-ခ။ ၂၀၁၈ခုနှစ်၊ ဒီဇင်ဘာလတွင် ရေးသားပြုစု ခဲ့သည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီ အစဉ်အပေါ် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနက ထပ်မံဖြည့်စွက်ရန် ညွှန်ကြား ထားသည့် ဥပဒေ၊ မူဘောင်များ

၁-၄-ဂ။ မြန်မာနိုင်ငံ အစိုးရ၏ မူဝါဒ၊ ဥပဒေ၊ ဖွဲ့စည်းမှု ဆိုင်ရာ မူဘောင် များနှင့် ပတ်ဝန်းကျင် ဆိုင်ရာ အရည်အသွေးစံနှုန်းသတ်မှတ်ချက်များ

၁-၄-ဃ။ မြန်မာအစိုးရမှ လိုက်နာရန်သဘောတူထားသော အပြည်ပြည်ဆိုင်ရာကွန်ဗေးရှင်းများ၊ သဘောတူညီချက်စာတမ်းများနှင့် သဘောတူညီချက်များ

၁-၄-က။ Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ၏ပတ်ဝန်းကျင်၊ ထုတ်ကုန် ပစ္စည်းများ ထုတ်လုပ်ခြင်းများနှင့်စပ်လျဉ်းသည့်မူဝါဒ၊ ဥပဒေ၊ မူဘောင်များနှင့် ဖွဲ့စည်းမှု ဆိုင်ရာများ

၁-၄-က-(၁) ။ ပြည်ထောင်စုသမ္မတနိုင်ငံတော် ဖွဲ့စည်းပုံအခြေခံဥပဒေ (၂၀၀၈)

၁-၄-က-(၂) ။ ရေအရင်းအမြစ်နှင့်မြစ်ချောင်းထိန်းသိမ်းရေးဥပဒေ(၂၀၀၆)

၁-၄-က-(၃)။ မြေအောက်ရေဥပဒေ(၁၉၃၀)

၁-၄-က-(၄)။ ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများ ဘေးအန္တရာယ် ကာကွယ်ရေး ဥပဒေ (၂၀၁၃)

၁-၄-က-(၅)။ ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများ ဘေးအန္တရာယ် ကာကွယ်ရေး နည်းဥပဒေ (၂၀၁၆)

၁-၄-က-(၆)။ လျှပ်စစ်ဥပဒေ



- ၁-၄-က-(၇)။ ပုဂ္ဂလိကစက်မှုလုပ်ငန်းဥပဒေ
- ၁-၄-က-(၈)။ ပို့ကုန်သွင်းကုန်းဥပဒေ
- ၁-၄-က-(၉)။ (၁၉၅၁)ခုနှစ်အလုပ်ရုံအက်ဥပဒေ
- ၁-၄-က-(၁၀)။ (၁၉၅၁)ခုနှစ်အလုပ်ရုံအက်ဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ
- ၁-၄-က-(၁၁)။ ခွင့်ရက်နှင့်အလုပ်ပိတ်ရက်အက်ဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ
- ၁-၄-က-(၁၂)။ ခွင့်ရက်နှင့်အလုပ်ပိတ်ရက်နည်းဥပဒေ
- ၁-၄-က-(၁၃)။ အလုပ်အကိုင်နှင့်ကျွမ်းကျင်ဖွံ့ဖြိုးမှုဥပဒေ
- ၁-၄-က-(၁၄)။ သဘာဝဘေးအန္တရာယ်ဆိုင်ရာစီမံခန့်ခွဲသည့်ဥပဒေ
- ၁-၄-က-(၁၅)။ အရေးပေါ်ထိခိုက်ဒဏ်ရာရရှိသည့်လူနာများကိုပြုစောင့်ရှောက်ခြင်းနှင့် စပ်လျဉ်း သည့်ဥပဒေ
- ၁-၄-က-(၁၆)။ ပြည်သူ့ကျန်းမာရေးဥပဒေ
- ၁-၄-က-(၁၇)။ ကူးစက်ရောဂါကာကွယ်တားဆီးရေးဥပဒေ
- ၁-၄-က-(၁၈)။ မြန်မာ့မီးသတ်တပ်ဖွဲ့ဥပဒေ
- ၁-၄-က-(၁၉)။ မြန်မာ့မော်တော်ယာဉ်ဥပဒေ
- ၁-၄-က-(၂၀)။ အမြန်လမ်းမကြီးဥပဒေ
- ၁-၄-က-(၂၁)။ အလုပ်သမားအဖွဲ့အစည်းဥပဒေ
- ၁-၄-က-(၂၂)။ အလုပ်သမားအဖွဲ့အစည်းနည်းဥပဒေ
- ၁-၄-က-(၂၃)။ အလုပ်သမားလျော်ကြေးအက်ဥပဒေ(၁၉၂၃)
- ၁-၄-က-(၂၄)။ အလုပ်သမားလျော်ကြေးအက်ဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ
- ၁-၄-က-(၂၅)။ အလုပ်သမားအငြင်းပွားမှုဖြေရှင်းရေးဥပဒေ
- ၁-၄-က-(၂၆)။ အခကြေးငွေပေးချေရေးဥပဒေ(၂၀၁၆)
- ၁-၄-က-(၂၇)။ လူမှုဖူလုံရေးဥပဒေ
- ၁-၄-က-(၂၈)။ မူပိုင်ခွင့်ဥပဒေ
- ၁-၄-က-(၂၉)။ ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးဥပဒေ
- ၁-၄-က-(၃၀)။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ





၁-၄-က-(၃၁)။ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ

၁-၄-က-(၃၂)။ အမျိုးသား ပတ်ဝန်းကျင် ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန် ချက်များ

၁-၄-က-(၃၃)။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းလုပ်ထုံးလုပ်နည်း

၁-၄-က-(၃၄)။ ဘွိုင်လာဥပဒေ

၁-၄-က-(၃၅)။ THE EXPLOSIVES ACT.

၁-၄-က-(၃၆)။ THE EXPLOSIVE SUBSTANCES ACT

၁-၄-ခ။ ၂၀၁၈ခုနှစ်၊ ဒီဇင်ဘာလတွင် ရေးသားပြု ခဲ့သည့်ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အပေါ် ပတ်ဝန်း ကျင်ထိန်းသိမ်းရေးဦးစီးဌာနက ထပ်မံဖြည့်စွက်ရန်ညွှန်ကြားထားသည့် ဥပဒေ၊ မူဘောင်များ

၁-၄-ခ-(၁)။ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာပေါ်လစီ (၂၀၁၉)

၁-၄-ခ-(၂)။ ရန်ကုန်စည်ပင်သာယာရေးကော်မတီဥပဒေ (၂၀၁၈)

၁-၄-ဂ။ မြန်မာနိုင်ငံအစိုးရ၏ မူဝါဒ၊ ဥပဒေ၊ ဖွဲ့စည်းမှုဆိုင်ရာမူဘောင်များနှင့် ပတ်ဝန်းကျင် ဆိုင်ရာ အရည်အသွေးစံနှုန်းသတ်မှတ် ချက်များ

မြန်မာနိုင်ငံရှိ အမျိုးမျိုးသော ဝန်ကြီးဌာနများမှ ပတ်ဝန်းကျင် ဆိုင်ရာနှင့် လူမှုရေး ဆိုင်ရာ မူဝါဒ၊ ဥပဒေ၊ ဖွဲ့စည်းမှု ဆိုင်ရာ မူဘောင် များကို ကဏ္ဍ အသီးသီးအတွက် ထုတ်ပြန် ထားပါသည်။ ယခုလက်ရှိ ထုတ်ပြန် ထားသော ပတ်ဝန်းကျင်နှင့် လူမှုရေး ဆိုင်ရာ ဥပဒေ(၈၂)ခုကို ဤအခန်းတွင် စာရင်းပြုစု ထားပါသည်။

၁-၄-ဃ။ မြန်မာအစိုးရမှ လိုက်နာရန်သဘောတူထားသော အပြည်ပြည်ဆိုင်ရာကွန်ဗေးရှင်းများ၊ သဘောတူညီချက်စာတမ်းများနှင့် သဘောတူညီချက်များ

စက်ရုံကြောင့်ဖြစ်ပေါ်လာနိုင်သောအကျိုးဆက်များကြောင့် ပတ်ဝန်းကျင် ထိခိုက် မှုမရှိ စေရန် မြန်မာနိုင်ငံအစိုးရ အနေဖြင့် နိုင်ငံတကာနှင့် သဘောတူ ထားသော ပတ်ဝန်းကျင်နှင့် သက်ဆိုင်သော သဘောတူညီချက် စာတမ်းများ ရှိပါသည်။ ယင်း သဘောတူညီချက်(၁၃)ခုကို ဤကဏ္ဍတွင် စာရင်းပြုစု ထားပါသည်။

## **၁-၅။ စက်ရုံအကြောင်းအရာဖော်ပြချက်**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ အကြောင်းအရာ ဖော်ပြချက်ကို အောက်ပါ အတိုင်းဖော်ပြထားပါသည် -



(က) စက်ရုံနောက်ခံနှင့်ရည်ရွယ်ချက်	URSP Mill သည် ကောက်ရိုးပျော့ဖတ်စက္ကူထုတ်လုပ်သောစက်ရုံဖြစ်ပြီး တစ်နှစ်ထုတ်လုပ်နိုင်မှုမှာ တန် ၁၃၅၀ ခန့်ဖြစ်ပါသည်။ စက်ရုံကို ၂၀၀၃ ခုနှစ်တွင် စတင်တည်ဆောက်ခဲ့ပြီး လိုအပ်သောစက်ပစ္စည်းအားလုံးကိုပြည်တွင်းမှဝယ်ယူတပ်ဆင်ခဲ့ပါသည်။ တည်ဆောက်ရန်ခက်ခဲသည့်စက်ပစ္စည်းအချို့ကိုပြည်တွင်းမှသုံးပြီးပစ္စည်းများ (Good Second Hand) ကိုဝယ်ယူခဲ့ပါသည်။ စက်များတပ်ဆင်ခြင်းကိုပြည်တွင်းပညာရှင်များဖြင့်ဆောင်ရွက်ခဲ့ပါသည်။ စက်ရုံ၏ရည်ရွယ်ချက်များမှာ ကောက်ရိုးများကို(စိုက်ပျိုးရေးဘေးထွက်ပစ္စည်း)တွင်ကျယ်စွာအသုံးပြုခြင်း၊ နိုင်ငံခြားငွေရှာဖွေခြင်း၊ နိုင်ငံတော်အခွန်အခရစေခြင်းနှင့် အလုပ်အကိုင်အခွင့်အလမ်းများရရှိစေရန်တို့ဖြစ်ပါသည်။
(ခ) စက်ရုံတည်နေရာနှင့်အကျယ်အဝန်း	စက်ရုံမှာမြောက်လတ္တီတွဒ် N 16° 50' 08.386" နှင့်အရှေ့လောင်ဂျီတွဒ် E 096° 16' 50.632" တွင်တည်ရှိပြီး ၂.၂ ဧကကျယ်ဝန်းပါသည်။ စက်မှုမြေအမျိုးအစားဖြစ်ပါသည်။ လတ္တီတွဒ်၊ လောင်ဂျီတွဒ်၊ Google မြေပုံ၊ OSM မြေပုံပေါ်တွင် စက်ရုံတည်နေရာများကိုအပိုင်း (၄-၂) တွင်တင်ပြထားပါသည်။ စက်ရုံပတ်ဝန်းကျင်ရှိလုပ်ငန်း နှင့် အဆောက်အအုံ များကိုလည်း တင်ပြထားပါသည်။
(ဂ) စက်ရုံစတင်တည်ဆောက်ခြင်း၊ စမ်းသပ်လည်ပတ်ခြင်းနှင့်စီးပွားဖြစ်ထုတ်လုပ်ခြင်း	အဆိုပါစက်ရုံကို ၂၀၀၃ ခုနှစ်တွင် စတင်တည်ဆောက်ခဲ့ပါသည်။ စက်စမ်းသပ်လည်ပတ်ခြင်းကို ၂၀၀၉ ခုနှစ်နှင့် စီးပွားဖြစ်ထုတ်လုပ်ခြင်းများကို ၂၀၁၀ ခုနှစ်တွင်ဆောင်ရွက်ခဲ့ပါသည်။
(ဃ) စက်ရုံအဆောက်အအုံများနေရာချထားပုံ	အဆိုပါစက်ရုံတွင် အဓိကအဆောက်အအုံ(၉)လုံးရှိပြီး အဆောက်အအုံများနေရာချထားပုံနှင့် အဆောက်အအုံများ၏ဓာတ်ပုံများကို အပိုင်း (၄-၄) တွင်တင်ပြထားပါသည်။ အဆောက်အအုံအမျိုးအစားနှင့်အတိုင်းအတာများကိုဖော်ပြထားပါသည်။

**(င) ကုန်ကြမ်းလိုအပ်ချက်၊ အသုံးပြုမှု၊ ရရှိမှုနှင့် ထားသိမှုအခြေအနေ**

စဉ်	ကုန်ကြမ်းအမျိုးအမည်	ရေတွက်ပုံ	အရေအတွက်	ထုတ်လုပ်သူ	ရရှိမည့်နေရာ	သိုလှောင်ထားရှိမှုအခြေအနေ
၁။	ကောက်ရိုး	တန်	၅၆၇၀	ပြည်တွင်း	လယ်သမားများ	ကွန်ကရစ်ကြမ်းခင်းပေါ်တွင်စတိုအတွင်း သိုလှောင်ထားပါသည်။ ပုံ(၄-၁၅) တွင်တင်ပြထားပါသည်။
၂။	ကော့စတစ်ဆီဒါ	တန်	၈၀၃	တရုတ်	ပြည်တွင်းဓာတုပစ္စည်းသိုလှောင်ရောင်းချသူများ	ပလတ်စတစ်အိတ်များဖြင့်ကွန်ကရစ်ကြမ်းခင်းပေါ်တွင်သစ်သားခုံများဖြင့်ထားသိုပါသည်။ ပုံ(၄-၁၆) တွင်တင်ပြထားပါသည်။
၃။	အိမ်သုံးဆား	kg	၂၁၆၀	ပြည်တွင်း	ဘုရင့်နောင်ပွဲရုံ	ပလတ်စတစ်အိတ်များဖြင့်စတိုတွင်သိုလှောင်ထားပါသည်။ ရေသန့်ဌာနတွင်လည်းထားသိုပါသည်။ ဆားအိတ်များ ထားသိုသည့် ဂိုဒေါင်ပုံကို ပုံ(၄-၁၆-က) တွင်ဖော်ပြထားပါသည်။
၄။	စပါးခွံ/လွှစာမှုန့်	တန်	၂၈၀၀	ပြည်တွင်း	လယ်သမားများ နှင့်သစ်စက်များ	ကွန်ကရစ်ကြမ်းခင်းပေါ်တွင်စုပုံထားပါသည်။ သိုလှောင်ရုံတွင်ထားရှိပါသည်။ လွှစာမှုန့်များ



**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

						ကိုပလတ်စတစ်အိတ်များဖြင့်စတိုတွင်ထားသိုပါသည်။ ပုံ(၄-၁၇-က) နှင့် ပုံ(၄-၁၇-ခ)တို့ဖြင့်တင်ပြထားပါသည်။
၅။	စက္ကူထုပ်ပတ်သံကြိုး	တန်	၅	ပြည်တွင်း	ဘုရင့်နောင်ပွဲရုံ	သံကြိုးခွေများကိုစတိုတွင်သိုလှောင်ထားပါသည်။
၆။	ဒီဇယ်ဆီ	ဂါလံ	၅၀၀	ပြည်တွင်း (သွင်းကုန်)	ဓာတ်ဆီဆိုင်များ	ဒီဇယ်ဆီများကိုဂါလံ၅၀သံတိုင်ကီများဖြင့်ထားသိုပါသည်။ ပုံ(၄-၁၇-ဂ) တွင် တင်ပြထားပါသည်။
၇။	စက်ဆီချောဆီ	ဂါလံ	၂၀၀	ပြည်တွင်း (သွင်းကုန်)	ဘုရင့်နောင်ပွဲရုံ	၅၀-ဂါလံဆန့်ဝင်သံတိုင်ကီများဖြင့်ထားသိုပါသည်။ ပုံ(၄-၁၇-ဃ)တွင် တင်ပြထားပါသည်။
၈။	ဟိုက်ဒရောလစ်ဆီ	ဂါလံ	၁၀၀	ပြည်တွင်း (သွင်းကုန်)	ဘုရင့်နောင်ပွဲရုံ	၅၀-ဂါလံဆန့်ဝင်သံတိုင်ကီများဖြင့်ထားသိုပါသည်။

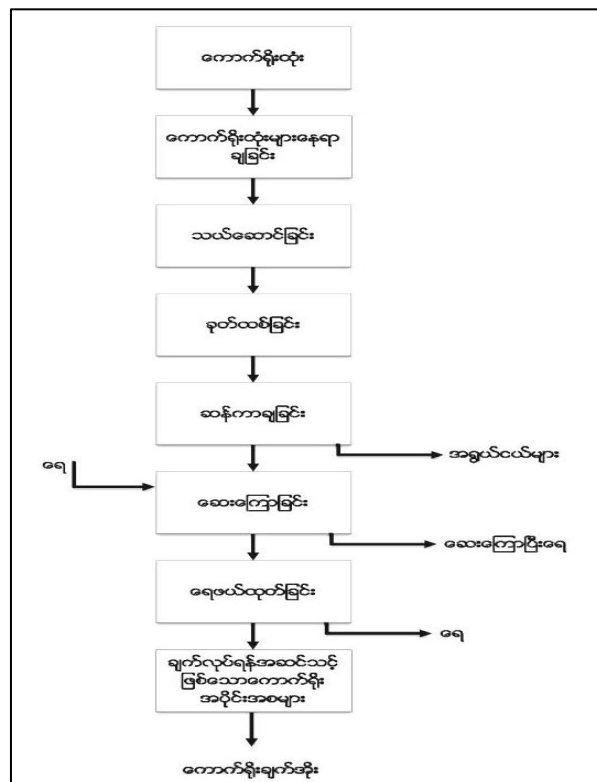
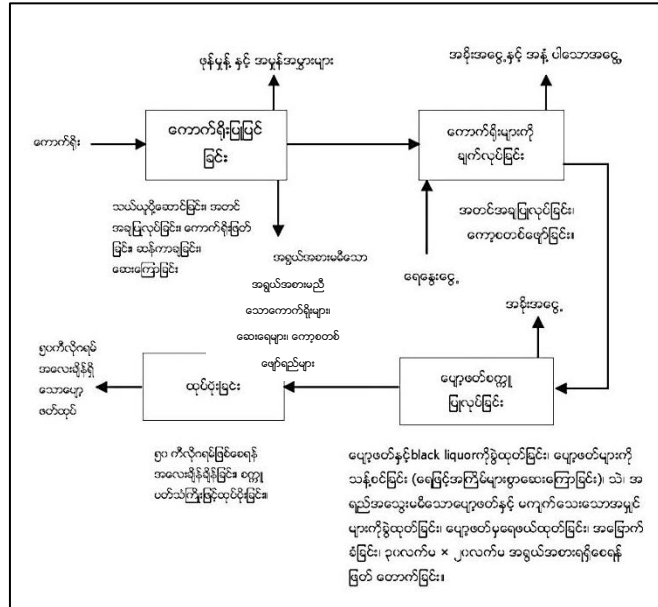


**(စ) ထုတ်လုပ်မှုနည်းစဉ်**

ကောက်ရိုးမှပျော့ဖတ်စက္ကူထုတ်လုပ်ပုံကို အပိုင်း(၃)ပိုင်းခွဲခြားနိုင်ပါသည်။

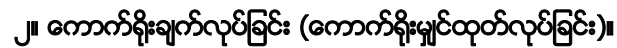
- (i) ကောက်ရိုးပြုပြင်ခြင်း
- (ii) ကောက်ရိုးချက်လုပ်ခြင်း (ကောက်ရိုးမျှင်ထုတ်လုပ်ခြင်း)
- (iii) ပျော့ဖတ်စက္ကူပြုလုပ်ခြင်းနှင့်ထုပ်ပိုးခြင်းတို့ဖြစ်ပါသည်။

လုပ်ငန်းစဉ်အကျဉ်းမှာ အောက်ပါအတိုင်းဖြစ်ပါသည်။



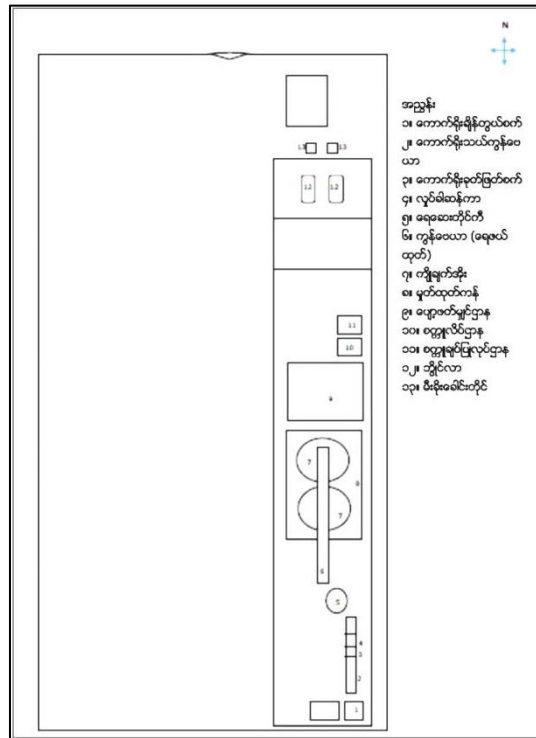
**၁။ ကောက်ရိုးပြုပြင်ခြင်း။**





ထုတ်လုပ်ပုံအသေးစိတ်ကို အပိုဒ် ၄-၆ တွင်တင်ပြထားပါသည်။

စက်ပစ္စည်းများနေရာချထားပုံကို အောက်ပါပုံဖြင့်တင်ပြထားပါသည်။



စက်ပစ္စည်းများ၏ဓာတ်ပုံများကို အပိုဒ်(၄-၇)တွင်တင်ပြထားပါသည်။

ဝန်ထမ်းခန့်ထားမှု၊ အလုပ်ချိန်နှင့်တစ်လအလုပ်လုပ်ရက်၊ တစ်နှစ်အလုပ်လုပ်ရက်နှင့် လူမှုရေးဆောင်ရွက်ချက်များကို အောက်ပါအတိုင်းဖော်ပြအပ်ပါသည်။

ဌာန	အမျိုးသား	အမျိုးသမီး	စုစုပေါင်း	မှတ်ချက်
ရုံး	၉	၇	၁၆	
အထွေထွေ	၆	၁	၇	
ထုတ်လုပ်ရေး	၁၀၆	၁	၁၀၇	အလှည့်(၁)      အလှည့်(၂)      အလှည့်(၃) ၃၅                          ၃၅                          ၃၆
လိုခြံရေး	၆	-	၆	လိုခြံရေးကုမ္ပဏီမှဝန်ထမ်းများဖြစ်ပါသည်။
စုစုပေါင်း			၁၃၀	

အလုပ်ချိန် ရုံး၊ အထွေထွေနှင့်ကုန်ထုတ် အမျိုးသမီးများ နောက်/ရက်  
ရက်သတ္တပတ်တစ်ပတ်တွင် (၆)ရက် (၀၈:၀၀ ~ ၀၆:၀၀)နာရီအလုပ်လုပ်ချိန်

ကျန်အမျိုးသားဝန်ထမ်းများ

၀၈:၀၀ ~ ၁၆:၀၀	}	ဧရိယာ/ရက်သတ္တပတ်တစ်ပတ်
၁၆:၀၀ ~ ၂၄:၀၀		
၀၀:၀၀ ~ ၀၈:၀၀		

လူမှုရေးဆောင်ရွက်ချက် - မြောက်ဥက္ကလာ၊ တာမွေ၊ သာကေတ၊ နေဝန်ထမ်းများအတွက် ဖယ်ရှိစီစဉ်ပေးပါသည်။  
ရပ်ဝေးမှဝန်ထမ်းများအတွက်အဆောင်နှင့် အစားအသောက်စီစဉ်ပေးပါသည်။

**(ဈ) အလုပ်လုပ်ချိန်၊ လအလိုက်၊ နှစ်အလိုက်အလုပ်လုပ်ရက်**

Nilar Pulp and Paper Co., Ltd. စက်ရုံတွင် ဝန်ထမ်းများအလုပ်လုပ်ချိန်၊ လအလိုက်၊ နှစ်အလိုက်အလုပ်လုပ်ရက်များကို အောက်ပါအတိုင်းဖော်ပြထားပါသည်။

ဌာန	တစ်ရက်အလုပ်လုပ်ချိန်	ရက်သတ္တပတ်တစ်ပတ် အလုပ်လုပ်ရက်	လအလိုက် အလုပ်လုပ်ရက်	နှစ်အလိုက် အလုပ်လုပ်ရက်
ရုံးလုပ်ငန်းများ	(၈)နာရီ၊ တနင်္လာမှစနေ	၆	၂၄ ~ ၃၀	၂၄၀ ~ ၃၂၀
ကုန်ထုတ်လုပ်မှု	(၈)နာရီ၊ တစ်ဆိုင်၊ ၆ရက်/တစ်ပတ်	၆	၂၄ ~ ၃၀	၂၄၀ ~ ၃၂၀

**(ည) ထုတ်ကုန်ပစ္စည်းအမျိုးအစား၊ ရက်အလိုက်၊ လအလိုက်၊ နှစ်အလိုက်ထုတ်လုပ်မှုနှင့် ဘေးထွက်ပစ္စည်းထွက်ရှိမှု**

Nilar Pulp and Paper Co., Ltd. စက်ရုံသည် ကောက်ရိုးပျော့ဖတ်စက္ကူထုတ်လုပ်သောစက်ရုံဖြစ်ပြီး ယင်းစက်ရုံ၏ရက်အလိုက်၊ လအလိုက်၊ နှစ်အလိုက်ထုတ်လုပ်မှုများကို အောက်ပါဇယားဖြင့်တင်ပြထားပါသည်။ အခြားဘေးထွက်ပစ္စည်းမရှိပါ။

ထုတ်ကုန်ပစ္စည်း	ရေတွက်ပုံ	နေ့အလိုက် ထုတ်လုပ်မှု	လအလိုက် ထုတ်လုပ်မှု	နှစ်အလိုက် ထုတ်လုပ်မှု	မှတ်ချက်
ကောက်ရိုးပျော့ဖတ်စက္ကူ	တန်	၃ ~ ၅	၁၁၂.၅	၁၃၅၀	ကုန်ကြမ်းရရှိမှု၊ လျှပ်စစ်ရရှိမှုနှင့် ဈေးကွက်ပေါ်မူတည်၍ထုတ်လုပ်ပါသည်။

**(ဋ) ရေသုံးစွဲမှုနှင့်အရင်းအမြစ်**

Nilar Pulp and Paper Co., Ltd. စက်ရုံသည် တစ်ရက် အသုံးပြုသည့် ရေပမာဏမှာ (၁၂၅,၀၀၀)ဂါလံခန့် ဖြစ်ပြီး (၆)လက်မ အဝိုင်းတွင်း နှစ်တွင်းမှ ထုတ်ယူပါသည်။ တွင်းအနက်မှာ ပေ(၄၀၀)ခန့် ဖြစ်ပါသည်။ ဘွိုင်လာတွင် အသုံးပြုမည့် ရေသန့်စင် စက်ကိရိယာ များကို အပိုဒ် (၄-၁၁)တွင် တင်ပြ ထားပါသည်။

**လုပ်ငန်းသုံးနှင့်ဝန်ထမ်းများနေ့စဉ်ရေသုံးစွဲမှုခန့်မှန်းဇယား**

**နေ့စဉ်**

	ရေသုံးစွဲမှု (ဂါလံ)	မှတ်ချက်
ဝန်ထမ်း	၂၅၀၀	ဝန်ထမ်း(၁၃၀)ဦးအတွက်
လုပ်ငန်းသုံး	၁၂၂,၅၀၀	

**(ဌ) တစ်နှစ်စွမ်းအင်လိုအပ်ချက်**

Nilar Pulp and Paper Co., Ltd. စက်ရုံ၏ နှစ်စဉ်စွမ်းအင် လိုအပ်ချက်ကို အောက်ပါဇယားဖြင့် တင်ပြ ထားပါသည်။

စွမ်းအင်အရင်းအမြစ်	ရေတွက်ပုံ (ယူနစ်)	အရေအတွက်	မှတ်ချက်
လျှပ်စစ်စွမ်းအင်	kWh	၈၀၀,၀၀၀	
စပါးခွံ	kg	၂,၈၀၀,၀၀၀	

**(ဍ) စွန့်ပစ်ပစ္စည်းများစီမံခန့်ခွဲမှု (အပိုင်အခဲ)စွန့်ပစ်ပစ္စည်း၊ စွန့်ပစ်ရည်၊ အရိုးအငွေ့နှင့်စွန့်ပစ်ပစ္စည်းများထွက်ရှိမှုနှင့် စွန့်ပစ်ပစ္စည်းများကိုစွန့်ပစ်သည့်နည်းစဉ်အကျဉ်းချုပ်**

**ထုတ်လွှတ်အရိုးအငွေ့၊ ဖုန်မှုန့်၊ အမှုန်အမွှားများ**

- မော်တော်ယာဉ်များနှင့် အရန်လျှပ်စစ်ထုတ်စက်များ၏ အိပ်ဇာမှထွက်ရှိသောလောင်ကျွမ်းဓာတ်ငွေ့များ
- ကောက်ရိုးများအတင်အချုပ်လုပ်ခြင်း၊ ဖြတ်တောက်ခြင်း၊ ဆန် ကာချခြင်းတို့မှ ထွက်ရှိသောဖုန်မှုန့်နှင့် အမှုန်အမွှားများ



- ကောက်ရိုးချက်အိုးမှ ကော့စတစ်အငွေ့များနှင့် ရေခိုးရေငွေ့ များ
- စပါးခွံ/လွှစာမှုန့်တို့၏အမှုန်အမွှားများ
- ဘွိုင်လာမှထွက်ရှိသောလောင်ကျွမ်းဓာတ်ငွေ့များ(ဘွိုင်လာ မီးခြမ်းနှင့် ခေါင်းတိုင်)
- စားဖိုဆောင်မှထွက်ရှိသောအခိုးအငွေ့နှင့် အနံ့ရှိသောအငွေ့ များ

**စီမံခန့်ခွဲမှုအစီအစဉ်**

- မော်တော်ယာဉ်များနှင့်အရန်လျှပ်စစ်ထုတ်စက်များ၏အင်ဂျင် စွမ်းရည်ကောင်းမွန်စေခြင်း
- အင်ဂျင်ပိုင်များကိုအချိန်မီဖြည့်တင်းလဲလှယ်ခြင်း
- အရည်အသွေးကောင်းမွန်သောလောင်စာဆီများအသုံးပြုခြင်း
- ကာဗွန်ဒိုင်အောက်ဆိုဒ်ထွက်ရှိမှုကို စုတ်ယူခြင်းဖြင့် လျော့နည်းစေရန် သစ်ပင်များ စိုက်ပျိုးထားရှိခြင်း
- အမှုန်ဖမ်းစနစ်ကိုကောင်းမွန်စေခြင်း
- ကောက်ရိုးချက်အိုး၏လေပေါက်ကိုဖြည်းညင်းစွာဖွင့်ခြင်း
- ဘွိုင်လာတွင် လေနှင့်လောင်စာအမျိုးမျိုးမှန်ကန်စေခြင်း

**စွန့်ပစ်ရည်**

- အသုံးပြုပြီးအင်ဂျင်ပိုင်၊ စက်ဆီချောဆီနှင့် ဘက်ထရီအက်ဆစ် များဖိတ်စင်မှုများ
- ဘွိုင်လာဘာလိုးဒေါင်းရေများ
- ရယ်ဆင်များကိုပြန်လည်အားဖြည့်စေသော ဆားပျော်ရည် အကျန်များ
- ကောက်ရိုးများကိုဆေးကြောပြီးရေများ
- ကောက်ရိုးချက်အိုး မှစွန့်ပစ်ရည်များ
- ပျော့ဖတ်များကိုသန့်စင်သည့်နေရာမှ စွန့်ပစ်ရည်များ
- ပျော့ဖတ်ပြုလုပ်သည့်နေရာမှ ဖိတ်စင်မှုများ
- စားဖိုဆောင်၊ ရုံးခန်း၊ ဓာတ်ခွဲခန်း၊ သန့်စင်ခန်းများနှင့် အထွေ ထွေသုံးသည့်နေရာများမှ စွန့်ပစ်ရည်များ

**စီမံခန့်ခွဲမှုအစီအစဉ်**

- အသုံးပြုပြီးအင်ဂျင်ပိုင်၊ စက်ဆီချောဆီ၊ ဘက်ထရီအက်ဆစ် များကိုစုဆောင်းသိမ်းဆည်းခြင်းနှင့် ထုခွဲရောင်းချ၍ရပါက ပြန် လည်ထုခွဲရောင်းချခြင်း
- လေမဲ့သန့်စင်ခြင်းစနစ်၊ အနည်ထိုင်သန့်စင်ခြင်းစနစ်၊ လေသွင်း သန့်စင်ခြင်းစနစ်၊ chemicalပစ္စည်းများထည့်၍သန့်စင်ခြင်းစနစ် စသောစနစ်များပါဝင်သည့် စွန့်ပစ်ရည်သန့်စင်သည့်စနစ်တွင် သန့်စင်ခြင်း

**အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ**

- အရွယ်အစားမညီသော ကောက်ရိုးစများ
- အရွယ်အစားမမီသော ပျော့ဖတ်များ
- ကုန်ကြမ်းပစ္စည်းအမျိုးမျိုး၏ထုပ်ပိုးပစ္စည်းအပျက်အစီးများ
- ပျော့ဖတ်စက္ကူများကိုထုပ်ပိုးသည့်သံကြိုးအပိုင်းအစများ
- ပြုပြင်ထိန်းသိမ်းသည့်ဌာနမှ စွန့်ပစ်အစိုင်အခဲများ၊ ဥပမာ - အသုံးပြုပြီးကော်ပတ်စက္ကူများ၊ သံတိုသံစများ
- စပါးခွံ/လွှစာမှုန့်တို့၏ပြာများ
- စက်ဆီချောဆီပုံးခွံအလွတ်များ

**စီမံခန့်ခွဲမှုအစီအစဉ်**

- ထုခွဲရောင်းချ၍ရသည်များကို ထုခွဲရောင်းချခြင်း၊ ရောင်းချ၍မရ သည်များကို စနစ်တကျစွန့်ပစ်ခြင်း
- စက်မှုဇုန်ကော်မတီ သို့မဟုတ် ရန်ကုန်စည်ပင်သာယာရေး ကော်မတီသို့ဆက်သွယ်၍စွန့်ပစ်စေခြင်း





(ပ) စွန့်ပစ်အပိုင်အခဲထွက်ရှိသည့်ပမာဏ၊ ပါဝင်သည့်အပိုင်အခဲအမျိုးအစားနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်

**စွန့်ပစ်အပိုင်အခဲများ**

- ပျော့ဖတ်စက္ကူထုပ်ပိုးသည့်သံကြိုးအပိုင်းအစများ
- စပါးခွံ/လွှစာမှုန့်များ
- စက်ဆီချောဆီပုံးခွံအလွတ်များ
- မီးသီး၊ မီးလုံးများ (အသုံးပြုပြီး၊ အကွဲ)
- အသုံးပြုပြီး စာရေးကိရိယာများ
- အသား၊ ငါးနှင့် ဟင်းသီးဟင်းရွက်များ၏ထုပ်ပိုးပစ္စည်းအ ဟောင်းများ
- အသုံးပြုပြီးကော်ပတ်စက္ကူအဟောင်းများ၊ လက်အိတ်အ ဟောင်းများ၊ သံတိုသံစများ၊ ဝရိန်ချောင်းအတိုအစများ
- ဖန်ထည်ပစ္စည်းအကွဲအရှများ
- ဓာတုပစ္စည်းများ၏ထုပ်ပိုးပစ္စည်းများ
- ရေစစ်စက္ကူအဟောင်းများ
- ပြာ
- အရွယ်အစားမညီသော ကောက်ရိုးများ
- အရွယ်အစားမမီသောပျော့ဖတ်များ
- သံ၊ ဖုန်မှုန့်
- စပါးခွံ/လွှစာမှုန့်ပြာများ

များကို အောက်ပါဇယားဖြင့်ဖော်ပြထားပါသည်။

**စွန့်ပစ်အပိုင်အခဲထွက်ရှိမှု၊ ပမာဏ၊ ပါဝင်သည့်ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်**

**တစ်နှစ်အခြေခံ**

စဉ်	စွန့်ပစ်အပိုင်အခဲများ	ရေတွက်ပုံ	အရေအတွက်	ပါဝင်ပစ္စည်းများ	စီမံခန့်ခွဲမှုစနစ်
၁။	<b>ကုန်ကြမ်းထုပ်ပိုးပစ္စည်းများ</b> -ပျော့ဖတ်စက္ကူထုပ်ပတ် သည့် သံကြိုးအတိုအစများ -ကော့စတစ်ဆိုဒါအိတ်ခွံများ -စက်ဆီချောဆီပုံးခွံများ	kg အိတ် ခု	၁၀ ၅၀၀ ၁၀	-သံ၊ ဇင့် -ပလတ်စတစ်၊ ပုံနှိပ်မင် -ပလတ်စတစ်၊ သံဖြူပုံးခွံ၊ သင်္ဘောဆေး၊ စက်ဆီချောဆီ အကျန်	စက်မှုဇုန်ကော်မတီနှင့် ရန်ကုန်မြို့တော်စည်ပင်သာယာ ရေးကော်မတီ၏လမ်းညွှန်မှု အတိုင်းစွန့်ပစ်ပါသည်။
၂။	<b>ရုံးလုပ်ငန်းမှစွန့်ပစ်ပစ္စည်းများ</b> မီးလုံး၊ မီးချောင်း (အကျွမ်း၊ အကွဲများ) အသုံးပြုပြီးစာရေးကိရိယာ	ခု ပုံ	၁၀ ၁	ဖန်၊ သတ္တု ပလတ်စတစ်၊ သတ္တု၊ စက္ကူ	စက်မှုဇုန်ကော်မတီနှင့် ရန်ကုန်မြို့တော်စည်ပင်သာယာ ရေးကော်မတီ၏လမ်းညွှန်မှု အတိုင်းစွန့်ပစ်ပါသည်။



	များ (စက္ကူ+ဘောပင်+ကော် ရက်ရှင်ပင်+တုန့်နာဆေးခွံ)				
၃။	<b>မီးဖိုချောင်မှစွန့်ပစ်ပစ္စည်းများ</b> သား၊ ငါး၊ ဟင်းသီးဟင်းရွက် ထုပ်ပိုးပစ္စည်းများ	ပုံ	၁	ပလတ်စတစ်၊ စားကြွင်းစား ကျန်၊ သားငါးသီးနှံအပိုင်း အစများ	စက်မှုဇုန်ကော်မတီနှင့် ရန်ကုန်မြို့တော်စည်ပင်သာယာ ရေးကော်မတီ၏လမ်းညွှန်မှု အတိုင်းစွန့်ပစ်ပါသည်။
၄။	<b>စက်ပြင်အလုပ်ရုံမှစွန့်ပစ် ပစ္စည်းများ</b> အသုံးပြုပြီးကော်ပတ်စက္ကူ၊ လက်အိတ်၊ သတ္တုအပိုင်း အစ၊ ဝရိန်ချောင်းအတိုအစ များ	ပုံ	၁	စက္ကူ၊ အဝတ်၊ ရာဘာ၊ သတ္တု	စက်မှုဇုန်ကော်မတီနှင့် ရန်ကုန်မြို့တော်စည်ပင်သာယာ ရေးကော်မတီ၏လမ်းညွှန်မှု အတိုင်းစွန့်ပစ်ပါသည်။
၅။	<b>မော်တော်ယာဉ်မှစက်ပစ္စည်း အဟောင်းများ</b> ကားတာယာအဟောင်း၊ အပျက်များ အသုံးပြုပြီးဘတ္တရီအိုးများ	ပုံ	၁	ရာဘာ၊ ဆာလဖျူရစ်အက်ဆစ်၊ ပလတ်စတစ်၊ ခဲဒြပ်ပေါင်းများ	စက်မှုဇုန်ကော်မတီနှင့် ရန်ကုန်မြို့တော်စည်ပင်သာယာ ရေးကော်မတီ၏လမ်းညွှန်မှု အတိုင်းစွန့်ပစ်ပါသည်။
၆။	<b>ဓာတ်ခွဲခန်းမှစွန့်ပစ်ပစ္စည်းများ</b> ဖန်ထည်အကျိုးအပွဲအကွဲများ ဓာတုပစ္စည်းထုပ်ပိုးပစ္စည်း များ အရည်စစ်စက္ကူ ပြာ	ပုံ	၁	ကောက်ရိုး၊ ဖုန်၊ သဲ၊ ကာဗွန်၊ လစ်ဂနင်	မီးရှို့၍ရသည့်များကိုမီးရှို့ကန် တွင်မီးရှို့ခြင်း၊ ပြာများကိုစက်မှု ဇုန်ကော်မတီနှင့်စည်ပင်သာယာ ရေးအဖွဲ့လမ်းညွှန်မှုဖြင့်စွန့်ပစ် ခြင်း

**(က) စွန့်ပစ်ရည်ထွက်ရှိမှု၊ ပါဝင်ပစ္စည်းများနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်**

ထွက်ရှိသည့်စွန့်ပစ်ရည်များမှာ

- သန့်စင်ခန်းများမှထွက်ရှိသောအရည်များ
- စားဖိုဆောင်မှထွက်ရှိသောအရည်များ
- ဘွိုင်လာဘာလိုးဒေါင်းရေများ
- ဖိတ်စင်သည့်အရည်များ
- ရေသန့်စင်သည့်စနစ်မှထွက်ရှိသည့် regenerated နှင့် reject ရေများ
- ကောက်ရိုးဆေးခြင်း၊ ပျောဖတ်ဆေးခြင်းနှင့် ကောက်ရိုးချက်အိုး များမှစွန့်ပစ်ရည်များ

တို့ကို စီမံခန့်ခွဲမှုအစီအစဉ်နှင့်အတူ အောက်ပါဇယားတွင်ဖော်ပြထားပါ သည်။



နေ့စဉ်

စဉ်	စွန့်ပစ်ရည်	ရေတွက်ပုံ	အရေအတွက်	ပါဝင်ပစ္စည်းများ	စီမံခန့်ခွဲမှုအစီအစဉ်
၁။	ဝန်ထမ်းများအသုံးပြုရာမှထွက်ရှိသည့်ဆေးကြောရေးများ	ဂါလံ	၂၅၀၀	ဆီး၊ ဝမ်း၊ အညစ်အကြေးများ	Septic Tank တွင်သဘာဝအလျောက်ပြိုကွဲခြင်း
၂။	မီးဖိုချောင်မှစွန့်ပစ်ရည်များ	ဂါလံ	၅၀	ဆီ၊ စားကြွင်းစားကျန်များ	လိုအပ်သည်ထက်ပိုမသုံးခြင်း
၃။	ဘွိုင်လာဘာလုံးဒေါင်းရေ	ဂါလံ	၁၅၀	ဓာတ်ဆားများ၊ ဆားများ	လိုအပ်သည်ထက်ပိုမသုံးခြင်း
၄။	ဖိတ်စင်မှုများ	ဂါလံ	အနည်းငယ်	စက်ဆီချောဆီ၊ ဘက်ထရီ အက်ဆစ်	သုတ်ပစ်သန့်ရှင်းခြင်း၊ ဓာတ်ပြယ်ခြင်း
၅။	ရေသန့်စင်ဌာန Regeneration reject ရေများ	ဂါလံ	၁၀၀၀	ဆားပျော်ရည်၊ ဓာတ်ဆားများ	လိုအပ်သည်ထက်ပိုမသုံးခြင်း
၆။	လုပ်ငန်းလုပ်ကိုင်စဉ်စွန့်ပစ်ရည်ထွက်ရှိမှုများ ကောက်ရိုးဆေးရာမှထွက်သည့်ရေပျော့ဖတ်ဆေးကြောရေး ကောက်ရိုးကျိုချက်အိုးမှထွက်ရှိရေ	ဂါလံ ဂါလံ ဂါလံ	၅၇၄၀၀ ၄၈၆၅၀ ၁၂၂၅၀	သံ၊ ဖုန်မှုန့် လစ်ဂနင်၊ သံ လစ်ဂနင်၊ ကော့စတစ်ဆိုဒါ	စွန့်ပစ်ရည်သန့်စင်ခြင်း၊ ပြန်သုံးခြင်း စွန့်ပစ်ရည်သန့်စင်ခြင်း၊ ပြန်သုံးခြင်း စွန့်ပစ်ရည်သန့်စင်ပြီးစွန့်ပစ်ခြင်း

စွန့်ပစ်ရည်စွန့်ပစ်သည့်နေရာ၊ စွန့်ပစ်ရည်သန့်စင်သည့်စနစ်နှင့်ပြန်လည်အသုံးပြုသည့်စွန့်ပစ်ရည်များကို အပိုဒ် (၄-၁၅)တွင် တင်ပြထားပါသည်။



**(တ) အန္တရာယ်ရှိပစ္စည်းထွက်ရှိမှုပမာဏ၊ ပါဝင်သည့်ပစ္စည်းများနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်**

အန္တရာယ်ရှိပစ္စည်းထွက်ရှိမှုနှင့် ပါဝင်သည့်ပစ္စည်းများမှာ

- အသုံးပြုပြီးမီးလုံးများ၊ မီးသီးများ၊ မီးလုံးအကွဲများ၊ မီးသီးအကွဲ များ
- အသုံးပြုပြီးဘက်ထရီအိုးများ
- စွန့်ပစ်ရည်များ

တို့ကို စီမံခန့်ခွဲမှု အစီအစဉ်နှင့် အတူ အောက်ပါ ဇယားတွင် ဖော်ပြ ထားပါသည်။

**ဘေးအန္တရာယ်ရှိစွန့်ပစ်ပစ္စည်း၊ ပါဝင်သည့်ပစ္စည်းနှင့်စီမံခန့်ခွဲမှုအစီအစဉ်**

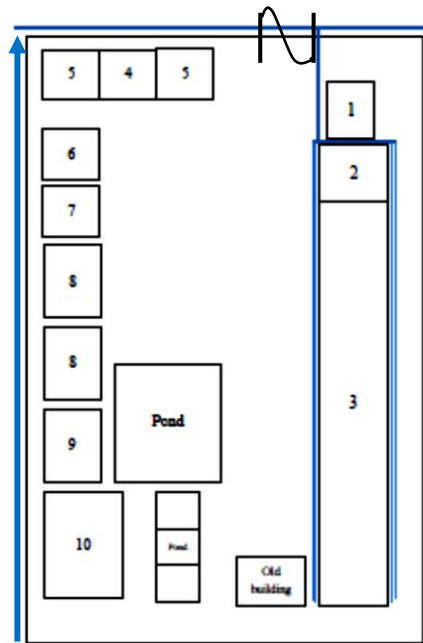
**တစ်နှစ်အခြေခံ**

စဉ်	စွန့်ပစ်ရည်	ရေ တွက် ပုံ	အရေ အတွက်	ပါဝင်ပစ္စည်းများ	စီမံခန့်ခွဲမှုအစီအစဉ်
၁။	အသုံးပြုပြီးမီးလုံး၊ မီးချောင်း အကျွမ်းအကွဲများ	ပုံ	၁	ဖန်၊ သတ္တု	စက်မှုဇုန်ကော်မတီနှင့် စည်ပင်သာယာရေး ကော်မတီ လမ်းညွှန်မှုဖြင့် စွန့်ပစ်ပါသည်။
၂။	အသုံးပြုပြီးဘက်ထရီအိုး	လုံး	၅	ခဲဓာတ်ပေါင်း၊ ပလတ်စတစ်၊ ရာဘာ၊ ဆာလဖျူရစ်အက် ဆစ်	စုဆောင်းသိမ်းဆည်း၍ထု ခွဲ ရောင်းချခြင်း။ စက်မှုဇုန်ကော်မတီနှင့် စည် ပင်သာယာရေး ကော်မတီ လမ်းညွှန်မှုဖြင့် စွန့်ပစ်ပါသည်။
၃။	စွန့်ပစ်ရည်များ	ဂါလံ	၃၅၃၀၆၄၀၀	လစ်ဂနင်၊ ကော့စတစ်ဆိုဒါ၊ ပျော့ဖတ်၊ BOD, COD, TSS တန်ဖိုးများမြင့်ပါသည်။	စွန့်ပစ်ရည်သန့်စင်သည့် စနစ် ဖြင့်သန့်စင် စွန့်ပစ်ခြင်း

**(ထ) မိုးရေနှင့်ရေမြောင်းသွယ်တန်းပုံစနစ်**

မိုးရေနှင့် ရေမြောင်းသွယ်တန်းပုံစနစ်ကို အောက်ပါအတိုင်းဖော်ပြထားပါသည်။





**1- The image of the security gate 2, 3 - The image of the boiler building and the main building**

**4 - The image of the generator building**

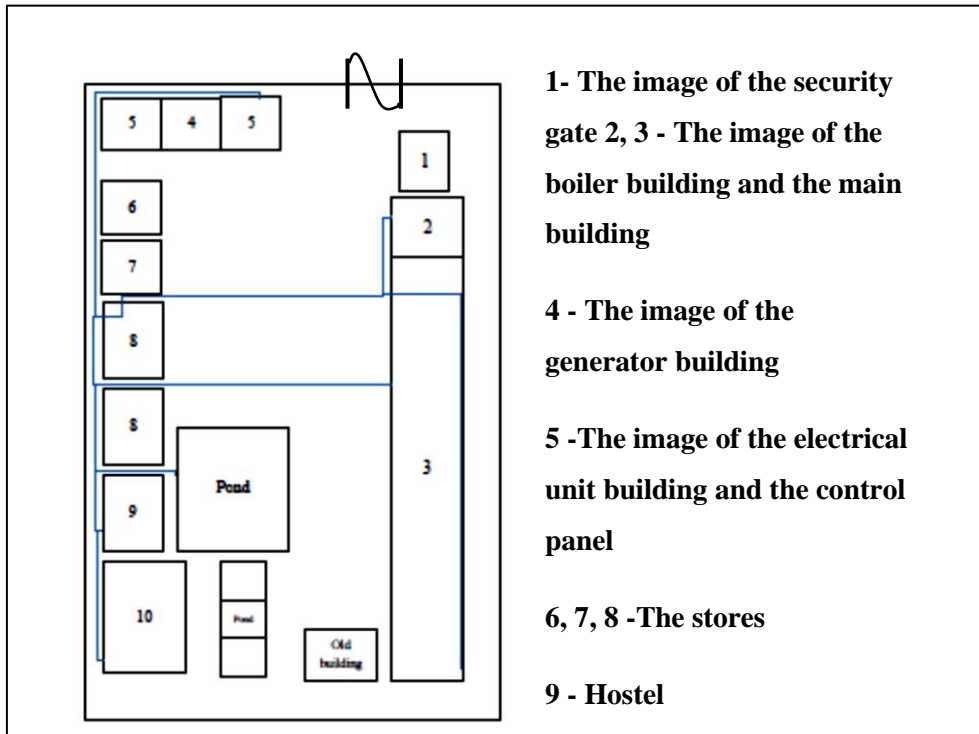
**5 -The image of the electrical unit building and the control panel**

**6, 7, 8 -The stores**

**9 - Hostel**

(ဒ) ရေဖြန့်ဝေသည့်စနစ်

ရေဖြန့်ဝေသည့်စနစ်ကို အောက်ပါအတိုင်းဖော်ပြထားပါသည်။



(ခ) လမ်းပန်းဆက်သွယ်ရေးစနစ်

စက်ရုံ၏လမ်းပန်းဆက်သွယ်ရေးစနစ်ကို အောက်ပါဇယားဖြင့် ဖော်ပြထားပါသည်။

သယ်ယူပို့ဆောင်ရေးစနစ်စီမံခန့်ခွဲမှု

စဉ်	ကုန်ကြမ်း၊ ကုန်ချောများ	မှ	ထိ	သယ်ယူပို့ဆောင်ရေးစနစ်	မှတ်ချက်
၁။	ကောက်ရိုး	သုံးခွ၊ ခရမ်း၊ ရန်ကုန်တိုင်းဒေသကြီး	စက်ရုံ	မော်တော်ကား	
၂။	ကော့စတစ်ဆိုဒါ	ရန်ကုန်	စက်ရုံ	မော်တော်ကား	
၃။	စပါးခွံ/လွှစာမှုန့်	ရန်ကုန်	စက်ရုံ	မော်တော်ကား	
၄။	ပျော့ဖတ်စက္ကူထုပ်ပိုးရန် ချည်သည့်ကြိုး	ရန်ကုန်	စက်ရုံ	မော်တော်ကား	
၅။	ပျော့ဖတ်	စက်ရုံ	ဆိပ်ကမ်း	မော်တော်ကား	

(န) ခွင့်ပြုမိန့်များ၊ လက်မှတ်များ၊ ငွေကြေးလျာထားချက်များ၊ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်တာဝန်ခံမည့်ပုဂ္ဂိုလ်

စဉ်	အကြောင်းအရာဖော်ပြချက်
၁။	ခွင့်ပြုမိန့်များ၊ အသိအမှတ်ပြုလက်မှတ်များ



	<ul style="list-style-type: none"> <li>- <b>ဘိုလ်လာအသုံးပြုခွင့်လက်မှတ်</b> <ul style="list-style-type: none"> <li>ဘိုလ်လာမှတ်ပုံတင်အမှတ် - မစ ၄၇၂၆</li> <li>ဘိုလ်လာအမျိုးအစား - ရေပြင်ညီရေကျွတ်၊ တရုတ်နိုင်ငံ (၂၀၀၀ ခုနှစ်ထုတ်)</li> <li>အသုံးပြုခွင့်ရေနေ့စွဲဖိအား - ၉.၅ kg/cm<sup>2</sup></li> <li>အသုံးပြုခွင့်ကာလအပိုင်းအခြား - ၁၆-၇-၂၀၁၉ မှ ၁၅-၇-၂၀၂၀</li> </ul> </li> <li>- <b>ဘိုလ်လာမှတ်ပုံတင်အမှတ်</b> - မစ ၅၃၀၈</li> <li>- <b>ဘိုလ်လာအမျိုးအစား</b> - ရေပြင်ညီရေကျွတ်၊ အိန္ဒိယနိုင်ငံ (၂၀၁၄ ခုနှစ်ထုတ်)</li> <li>- <b>အသုံးပြုခွင့်ရေနေ့စွဲဖိအား</b> - ၁၀.၅၄ kg/cm<sup>2</sup></li> <li>- <b>အသုံးပြုခွင့်ကာလအပိုင်းအခြား</b> - ၁၄-၈-၂၀၁၉ မှ ၁၄-၈-၂၀၂၀</li> </ul> <p><b>ကုမ္ပဏီမှတ်ပုံတင်</b></p> <ul style="list-style-type: none"> <li>- <b>ကုမ္ပဏီမှတ်ပုံတင်အမှတ်</b> - No. ၁၁၆၆၅၃၃၆၂</li> <li>(မူလအမှတ်) - No. ၃၈၈၂/ ၂၀၁၁-၂၀၂၀</li> </ul> <p><b>ပို့ကုန်သွင်းကုန်လက်မှတ်</b></p> <ul style="list-style-type: none"> <li>- <b>မှတ်ပုံတင်အမှတ်</b> - ၂၇၆၇၉ (၁၉-၀၃-၁၂)</li> <li><b>စတင်သည့်ရက်စွဲ</b> - ၁၅-၀၂-၂၀၂၀</li> <li><b>ကုန်ဆုံးရက်စွဲ</b> - ၁၄-၀၂-၂၀၂၅</li> </ul> <p><b>ပုဂ္ဂလိကစက်မှုလုပ်ငန်းမှတ်ပုံတင်</b></p> <ul style="list-style-type: none"> <li>- <b>မှတ်ပုံတင်အမှတ်</b> - ရက / ကြီး / ၁၈၁၉</li> <li><b>မှတ်ပုံတင်သက်တမ်းကုန်ရက်</b> - ၃၀-၉-၂၀၂၀</li> </ul> <p><b>၄၀၀V, ၆၂၅KVA လျှပ်စစ်ထုတ်စက်အသုံးပြုခွင့်လက်မှတ်</b></p> <p><b>လျှပ်စစ်ဓာတ်အားဘေးအန္တရာယ်ကင်းရှင်းစွာအသုံးပြုခွင့်လက်မှတ်</b></p> <ul style="list-style-type: none"> <li>- <b>လက်မှတ်နံပါတ်</b> - EI/ YD ၄၅၂/ ၁-၂၀၁၉</li> <li><b>သက်တမ်းကုန်ဆုံးရက်</b> - ၂၆-၁-၂၀၂၁</li> </ul> <p><b>ဓာတုပစ္စည်းနှင့်ဆက်စပ်ပစ္စည်းများလုပ်ငန်းလိုင်စင်</b></p> <ul style="list-style-type: none"> <li>- <b>လိုင်စင်အမှတ်</b> - ၀၀၀၁၃၈ (နည်းဥပဒေ ၈)</li> <li><b>ပုံစံ(၂) လုပ်ငန်းအရေအတွက်</b> - ၈ ခု</li> <li><b>သက်တမ်းကုန်ဆုံးရက်</b> - ၁၉-၁၁-၂၀၂၀</li> </ul> <p><b>ဓာတုပစ္စည်းနှင့်ဆက်စပ်ပစ္စည်းများမှတ်ပုံတင်လက်မှတ်</b></p> <ul style="list-style-type: none"> <li>- <b>မှတ်ပုံတင်အမှတ်</b> - ၀၀၀၀၈၁ (၂၇)</li> <li><b>ပုံစံ(၁) လုပ်ငန်းအရေအတွက်</b> - ၁ ခု</li> <li><b>သက်တမ်းကုန်ဆုံးရက်</b> - ၂၇-၁၁-၂၀၂၀</li> </ul> <p><b>ကုန်သွယ်မှုနှင့်စက်မှုလုပ်ငန်းရှင်များအသင်းဝင်လက်မှတ်</b></p> <ul style="list-style-type: none"> <li>- <b>အသင်းဝင်နံပါတ်နှင့်ရက်စွဲ</b> - ၂၃၇၇၂ (၈၃-၂၀၁၂)</li> <li>- <b>သက်တမ်းတိုးမြှင့်ကာလ</b> - ၁-၁-၂၀၁၉ မှ ၃-၁၂-၂၀၂၀</li> </ul> <p><b>ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ</b></p> <ul style="list-style-type: none"> <li>- <b>၂၀၂၀ခုနှစ်လုပ်ငန်းလိုင်စင်</b></li> <li><b>လိုင်စင်အမှတ်</b> - ၀၇၂၂၂၀၀၄၅၅</li> </ul>
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	သက်တမ်းကုန်ဆုံးရက် - ၃၀ စက်တင်ဘာ ၂၀၂၀ ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းခြင်းအသိအမှတ်ပြုထောက်ခံချက် - ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီမှထုတ်ပေးသည့် ၁-၁၀-၂၀၁၉ မှ ၃၀-၉-၂၀၂၀
၂။	<b>Material Safety Data Sheet</b> ကော့စတစ်ဆိုဒါ အိမ်သုံးဆေး စက်ဆီချောဆီ ဒီဇယ်ဆီ ဘက်ထရီအက်ဆစ်
၃။	လုပ်ငန်းပိတ်သိမ်းချိန်၊ လက်ရှိထိခိုက်မှုများအား လျော့ချခြင်း၊ ပတ်ဝန်းကျင် နှင့်လူမှု စီမံခန့်ခွဲမှု အစီအစဉ်ပါ ထိခိုက်မှုကို လျော့ချခြင်း၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး၊ ကာဗွန်လျော့ချရေး လုပ်ငန်းများတွင် သုံးစွဲရန် ငွေကြေး လျာထားငွေများ စက်ရုံပိတ်သိမ်းချိန်ငွေကြေးလျာထားချက် - ၁၁၇,၈၅၀,၀၀၀ ကျပ် လက်ရှိထိခိုက်မှုများလျော့ချရန်ငွေကြေးလျာထားချက် - ၄,၉၂၀,၀၀၀ ကျပ် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်စောင့်ကြပ်ကြည့်ရှုရေး၊ ကျန်းမာရေးနှင့်လုပ်ငန်းခွင် ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်ကာဗွန်လျော့ချရေးငွေကြေးလျာထားချက် - ၁၁,၇၀၀,၀၀၀ ကျပ်
၄။	<b>ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်တာဝန်ခံမည့်ပုဂ္ဂိုလ်</b> အမည် ဦးတင်အောင်မိုး ရာထူး စက်ရုံမန်နေဂျာ ဆက်သွယ်ရန်ဖုန်း ၀၉-၉၇၇၂၁၂၀၁၃ အီးမေးလ်လိပ်စာ ceooffice.ursp@nppcoltd.com

## ၁-၆။ လက်ရှိသဘာဝပတ်ဝန်းကျင်အခြေအနေနှင့် လူမှုရေးအခြေအနေ ဖော်ပြချက်

လက်ရှိသဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင် အခြေအနေများကို ၂၀၁၈ ခုနှစ် အောက်တိုဘာလ (၃၀) ရက်တွင် ပြုစုထားသည့် ဒဂုံမြို့သစ် (ဆိပ်ကမ်း) မြို့နယ် အထွေထွေအုပ်ချုပ်ရေး ဦးစီးဌာန၏ ဒေသဆိုင်ရာ အချက်အလက်များမှ ရယူပါသည်။

### ၁-၆-က။ ဒဂုံမြို့သစ်(ဆိပ်ကမ်း)မြို့နယ်

URSP Mill စက်ရုံသည် ဒဂုံမြို့သစ် မြို့နယ်တွင် တည်ရှိပါသည်။





**တည်နေရာ၊အကျယ်အဝန်းနှင့်လူမှုဝန်းကျင်လေ့လာသည့်နယ်ပယ်**

မြောက်လတ္တီတွဒ် ၁၆°၄၆'နှင့် ၁၆°၄၉' အကြား အရှေ့ လောင်ဂျီတွဒ် ၉၆°၁၁'နှင့် ၉၆°၁၃' အကြားနှင့် ရိယာ ၃၂.၉၇ စတုရန်း မိုင်ဖြစ်ပါသည်။ လူမှုဝန်းကျင်ကို ဒဂုံမြို့သစ် (ဆိပ်ကမ်း)နှင့် အဝန်းအဝိုင်းထဲတွင် လေ့လာပါသည်။

**နယ်နိမိတ်**

အရှေ့နှင့် တောင်ဘက်တွင် သံလျင်မြို့၊ တောင်ဘက်တွင် သာကေတမြို့နယ်၊ အနောက် ဘက်တွင် ဒဂုံမြို့သစ်(တောင်)မြို့နယ်၊ မြောက်ဘက်တွင် ဒဂုံမြို့သစ် (တောင်) မြို့နယ်နှင့် လည်းကူး မြို့နယ်။

**မြေမျက်နှာသွင်ပြင်**

ပင်လယ်ရေမျက်နှာပြင်ထက်(၁၄.၄)ပေ ရှိပါသည်။

**မြေအသုံးချမှု**

စုစုပေါင်းမြေ (၂၁၅၅၂) ဧကတွင် စိုက်ပျိုးမြေ (၆၆၆၅) ဧက၊လုပ် ထားမြေ (၁၄၈၈၇) ဧက ရှိပါသည်။

**ရေဆင်း**

မြစ်ချောင်းများနည်းပါးပါသည်။ ပဲခူးမြစ်သည်ထင်းရှားပါသည်။

**စက်ရုံတည်နေရာ**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံသည် စက်မှုဇုန် (၁)တွင် တည်ရှိပြီး ပုံ(၄-၂-က)၊ ပုံ(၄-၂-ခ) နှင့် ပုံ(၄-၃-ဂ) တို့တွင်ဖော်ပြ ထားပါသည်။

**၁-၆-ခ။ ရာသီဥတုနှင့်သဘာဝပတ်ဝန်းကျင်**

**၁-၆-ခ-(၁)။ ရာသီဥတု**

**ရာသီဥတု**

- ပူနွေးစွတ်စိုသော ရာသီဥတုနှင့် အမြင့်ဆုံး အပူချိန် ၄၂°C နှင့်အနိမ့်ဆုံးအပူချိန် ၁၆°C ရှိပြီး မိုးရွာမှု နှုန်းများကို ဇယားဖြင့်ဖော်ပြထားပါသည်။

**သဘာဝပေါက်ပင်**

- ဒဂုံမြို့သစ်(ဆိပ်ကမ်း) မြို့နယ်အတွင်း ပေါက် ရောက်သည့် သဘာဝ ပေါက်ပင်များမှာ ပင်လယ် ဒီရေရောက်တောများ ဖြစ်သည့် နေ၊ လမု၊ ခရာ စသည့် အပင်များဖြစ်ပါသည်။

**၁-၆-ခ-(၂)။ မြေအရည်အသွေး**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ပတ်ဝန်းကျင် မြေအရည် အသွေးကို သိရှိနိုင်ရန် ၂၀၁၈ ခုနှစ် ဖေဖော်ဝါရီလ (၁၅)ရက်တွင် စက်ရုံအတွင်း ပင်မ အဆောက်အဦနှင့် ပစ္စည်းထိန်း စတို ကြားနေရာ လွတ်တွင် မြေနမူနာ များကောက်ယူ ဓာတ်ခွဲ စမ်းသပ် ခဲ့ပါသည်။ နမူနာ ကောက်ယူနေပုံ နေရာ ဖော်ပြချက်၊ ရလဒ်များ တို့ကို



အပိုင်း (၅-၂-၂) တွင် တင်ပြ ထားပါသည်။ ရလဒ်များ အရ အားဆင်းနစ်၊ ကော့ပါး၊ ဆိုင်ယာနိုက်၊ မင်းဂနီများ မတွေ့ရပဲ အလူမီနီယမ်၊ ကလိုရိုက်၊ အိုင်းရင်များ တွေ့ရှိပါသည်။ ယခု တန်ဖိုးများကို နှောင်နှစ်များ၏ အခြေခံတန်ဖိုး အဖြစ် မှတ်ယူရန် ဖြစ်ပါသည်။ မြေဓာတ်ခွဲ ရလဒ်များကို ဖော်ပြထားပါသည်။

**Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ မြေထုအရည်အသွေးများမှာ အောက် ပါအတိုင်းဖြစ်ပါသည် -**

Aluminum	-	0.1 mg/kg soil
Arsenic	-	ND
Chloride	-	0.135g/kg soil
Copper	-	ND
Cyanide	-	ND
Extractable Acidity	-	2cmol/kg soil
Manganese	-	ND
P-Alkalinity	-	0
pH	-	7.88
Total Alkalinity	-	4.24mmol/L extract
Total Iron	-	0.025g/kg soil

**၁-၆-ခ-(၃)။ ပတ်ဝန်းကျင်ရေနှင့်မြေအောက်ရေ အရည်အသွေးများ**

အဆိုပါစက်ရုံ၏ အရှေ့ဘက်ရှိ မြောင်းရေကို ပတ်ဝန်းကျင် ရေအဖြစ် မှတ်ယူ၍ အဝီစိတွင်းရေကို မြေအောက်ရေ အဖြစ်မှတ်ယူကာ နမူနာများ ကောက်ယူခဲ့ပြီး ဓာတ်ခွဲ ခန်းနှစ်ခုတွင် စမ်းသပ်ခဲ့ ပါသည်။ ယင်း ဓာတ်ခွဲခန်း နှစ်ခုမှ ရလဒ် များကို အောက်ပါ ဇယားတွင် နှိုင်းယှဉ် ဖော်ပြ ထားပါသည်။

**စက်ရုံ၏အရှေ့ဘက်ရှိမြောင်းရေဓာတ်ခွဲခန်းရလဒ်နှင့် NEQ (E)G တန်ဖိုးနှိုင်းယှဉ်ချက်**

Sr. No.	Parameter	Unit	TestResult	NEQ(E)G Pulp and Paper Mill	Remark
<b>G.M.E.S Test Result</b>					
1.	Biochemical Oxygen Demand	kg/ADt	1064	0.7	



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2.	Chemical Oxygen Demand	kg/ADt	2290	10	
3.	pH	-	13	6~9	
4.	Total Suspended Solids	kg/ADt	699	1	
<b>Ecolab Test Result</b>					
1.	Biochemical Oxygen Demand	mg/l	3748		
2.	Chemical Oxygen Demand	mg/l	>15000		

**အိမ်တွင်းရေကတ်ခွဲခန်းရလဒ်များ**

Sr. No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
			Type of Water	WHO (2011)	EPA (Spring 2012)	Indian Specification(IS:10 500,2012)
			Tube Well			
G.M.E.S Test Result						
1.	Aluminum	ppm	0.02	0.2	0.2	0.03
2.	Arsenic	µg/l	ND	10	10	10
3.	Chloride	ppm	92	250	250	250
4.	Copper	ppm	ND	2	1	0.05
5.	Cyanide	ppm	ND	0.07	0.2	0.05
6.	Manganese	ppm	ND	0.4	0.05	0.1
7.	pH	-	6.89	6.5~8.5	6.5~8.5	6.5~8.5
8.	Sulfate	ppm	ND	250	250	200
9.	Total Alkalinity as CaCO <sub>3</sub>	ppm	227	-	-	200
10.	Total Dissolved Solids	ppm	480	600	500	500
11.	Total Hardness as CaCO <sub>3</sub>	ppm	190	500	-	200
12.	Total Iron	ppm	0.1	0.3	0.3	0.3
13.	Turbidity	NTU	5.61	5	-	1
Ecolab Test Result						
1.	Arsenic	ppm	0	10	10	10
2.	Chloride	ppm	67	250	250	250
3.	pH	-	7.5	6.5~8.5	6.5~8.5	6.5~8.5



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4.	Total Hardness as CaCO <sub>3</sub>	ppm	130	500	-	200
5.	Total Iron	ppm	<0.1	0.3	0.3	0.3

**သောက်ရေဓာတ်ခွဲခန်းရလဒ်များ**

Sr. No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
			Type of Water	WHO (2011)	EPA (Spring 2012)	Indian Specification(IS:10 500,2012)
			Drinking Water			
G.M.E.S Test Result						
1.	Aluminum	ppm	0.01	0.2	0.2	0.03
2.	Arsenic	µg/l	ND	10	10	10
3.	Chloride	ppm	40	250	250	250
4.	Copper	ppm	ND	2	1	0.05
5.	Cyanide	ppm	ND	0.07	0.2	0.05
6.	Manganese	ppm	ND	0.4	0.05	0.1
7.	pH	-	6.80	6.5~8.5	6.5~8.5	6.5~8.5
8.	Sulfate	ppm	ND	250	250	200
9.	Total Alkalinity as CaCO <sub>3</sub>	ppm	73	-	-	200
10.	Total Dissolved Solids	ppm	230	600	500	500
11.	Total Hardness as CaCO <sub>3</sub>	ppm	48	500	-	200
12.	Total Iron	ppm	0.1	0.3	0.3	0.3
13.	Turbidity	NTU	0.84	5	-	1
Ecolab Test Result						
1.	Arsenic	ppm	0.005	10	10	10
2.	Chloride	ppm	100	250	250	250
3.	pH	-	7.3	6.5~8.5	6.5~8.5	6.5~8.5
4.	Total Hardness as CaCO <sub>3</sub>	ppm	20	500	-	200
5.	Total Iron	ppm	<0.1	0.3	0.3	0.3



သောက်ရေ နမူနာလည်း ကောက်ယူခဲ့ပြီး အဆိုပါ ဓာတ်ခွဲခန်း နှစ်ခုတွင် စမ်းသပ်ခဲ့ပြီး ရလဒ် အသေးစိတ် အချက်အလက်များ၊ နမူနာ ကောက်ယူ နေပုံများနှင့် နမူနာ ကောက်ယူသည့် နေရာပြပုံ တို့ကို စာပိုဒ် (၅-၂-၃)တွင် ဖော်ပြ ထားပါသည်။

**၁-၆-ခ-(၄)။ လေထုအရည်အသွေး**

အဆိုပါစက်ရုံ၏လေထုအရည်အသွေးကို အပိုင်း(၃)ပိုင်းဖြင့် ခွဲခြားဖော်ပြ ထားပါသည်။

**ပတ်ဝန်းကျင်လေထုအရည်အသွေး**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ ပတ်ဝန်းကျင် လေထုအရည်အသွေးကို သိရှိနိုင်ရန် စက်ရုံ အဆောက်အဦနှင့် စတု အဆောက်အဦ ကြား နေရာတွင် တိုင်းတာ ခဲ့ပါသည်။ ရလဒ်များကို NEQ(E)G စံနှုန်း တန်ဖိုးများနှင့် နှိုင်းယှဉ် ဖော်ပြထားပါသည်။ စံနှုန်း တန်ဖိုးမရှိသော parameterများ ကိုလည်း ရလဒ် အစီရင်ခံစာ အပိုဒ်( ၅-၂-၄)တွင် ဖော်ပြ ထားပါသည်။

Sr. No.	Parameters	Air quality result measured at space between main building - store	Standard Values of National Environmental Quality (Emission) Guidelines	Less/More	Remark
1.	NO <sub>2</sub> , µg/Nm <sup>3</sup>	35.85	200 (one hour)	-164.15	
2.		17.07	100 (8 hour)	-82.93	
3.	Ozone, µg/Nm <sup>3</sup>				
4.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	79.66	50	+29.66	
5.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	51.61	25	+26.61	
	SO <sub>2</sub> , µg/Nm <sup>3</sup>	0.03	20	-19.97	

ပတ်ဝန်းကျင် လေထု အရည်အသွေး ရလဒ်များ၊ တိုင်းတာသည့် နေရာပြပုံနှင့် နမူနာ ကောက်ယူသည့် နေရာပြပုံကို စာပိုဒ် (၅-၂-၄)တွင် ဖော်ပြ ထားပါသည်။

**လုပ်ငန်းခွင်လေထုအရည်အသွေး**

အဆိုပါစက်ရုံ၏ လုပ်ငန်းခွင် လေထု အရည်အသွေးကို သိရှိနိုင်ရန် နေရာ(၇) နေရာတွင် တိုင်းတာ ခဲ့ပါသည်။ ယင်း နေရာ(၇) နေရာမှာ (၁) ကောက်ရိုး သိုလှောင်သည့်နေရာ၊ (၂) ကောက်ရိုး ချက်လုပ်သည့် အိုးအနီး၊ (၃) ကော့စတစ် ဆိုဒါ ဖျော်သည့် ကန်အနီး၊ (၄) ကောက်ရိုးချက်အိုး အတွင်းသို့ ကောက်ရိုးဖြည့်သည့် နေရာအနီး၊ (၅) ပျော့ဖတ်မှ ရေဖယ်သည့် နေရာအနီး၊ (၆) ကုန်ချော ပစ္စည်းများ အနီးနှင့် (၇) သွိုင်လာ အခန်းတို့တွင် ဖြစ်ကြပါ သည်။ ရလဒ်များကို စံနှုန်း တန်ဖိုးများနှင့် အောက်ပါ အတိုင်း နှိုင်းယှဉ် ဖော်ပြ ထားပါသည်။



**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

Sr. No.	Parameter	Air quality results	Standard Values of National Environmental Quality (Emission) Guidelines	Less/More	Remark
<b>ကောက်ရိုးသိုလှောင်သည့်နေရာ</b>					
1.	Total Volatile Organic Compound (TVOC), ppm	ND	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	404	50	+354	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	396	25	+371	
<b>ကောက်ရိုးချက်လုပ်သည့်အိုးအနီး</b>					
1.	Total Volatile Organic Compound (TVOC), ppm	3.7	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	239	50	+189	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	252	25	+227	
<b>ကျောစတစ်ဆိုဒါဖျော်သည့်ကန်အနီး</b>					
1.	Total Volatile Organic Compound (TVOC), ppm	61.4	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	461	50	+411	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	367	25	+342	
<b>ကောက်ရိုးချက်အိုးအတွင်းသို့ကောက်ရိုးဖြည့်သည့်နေရာအနီး</b>					
1.	Total Volatile Organic Compound (TVOC), ppm	1.8	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	418	50	+368	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	269	25	+244	



ပျော်ဖတ်မှုရေယံသည့်နေရာအနီး					
1.	Total Volatile Organic Compound (TVOC), ppm	3.7	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	239	50	+189	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	252	25	+227	
ကုန်ချောပစ္စည်းများအနီး					
1.	Total Volatile Organic Compound (TVOC), ppm	-	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	245	50	+195	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	198	25	+173	
ဘိုလ်လာအခန်း					
1.	Total Volatile Organic Compound (TVOC), ppm	-	-	-	
2.	Particulate Matter PM <sub>10</sub> , µg/Nm <sup>3</sup>	322	50	+272	
3.	Particulate Matter PM <sub>2.5</sub> , µg/Nm <sup>3</sup>	154	25	+129	

လေထု အရည်အသွေး တိုင်းတာရာတွင် အသုံးပြုသည့် ကိရိယာများ၊ တိုင်းတာ နေပုံများ၊ တိုင်းတာသည့် နေရာများနှင့် ရလဒ် အစီရင်ခံစာတို့ကို စာပိုဒ် (၅-၂-၄)တွင် ဖော်ပြ ထားပါသည်။

**ဘိုလ်လာခေါင်းတိုင်မှထွက်ရှိသည့်ဓာတ်ငွေ့အရည်အသွေး**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ ဘိုလ်လာ ခေါင်းတိုင်မှ ထွက်ရှိသော ဓာတ်ငွေ့ အရည်အသွေးကို သိရှိနိုင်ရန် ဘိုလ်လာ ခေါင်းတိုင်တွင် တိုင်းတာခဲ့ပြီး ရလဒ် များတို့ကို စာပိုဒ် (၅-၂-၄) အောက်ပါ အတိုင်း ဖော်ပြ ထားပါသည်။

Parameter	Unit	Value				Small combustion facilities emission guideline	Remark
		After 15 minute	After 30 minute	After 45 minute	After 60 minute		
O <sub>2</sub>	mol %	17.8	18.2	16	20	-	NO <sub>2</sub> နှင့် SO <sub>2</sub> တန်ဖိုးများ စံနှုန်းအတွင်း ဝင်ပါသည်။
CO	mg/m <sup>3</sup>	168	210	195	120	-	
CO <sub>2</sub>	mol %	2.7	3	3.1	2	-	
NO <sub>2</sub>	mg/m <sup>3</sup>	12	4	0	30	460	
SO <sub>2</sub>	mg/m <sup>3</sup>	16	0	21	30	2000	



နမူနာ ကောက်ယူ နေပုံများနှင့် ရလဒ်များကို စာပိုဒ် (၅-၂-၄) တွင် ဖော်ပြ ထားပါသည်။

**၁-၆-ခ-(၅)။ အနံ့**

ပတ်ဝန်းကျင် လေထု အရည်အသွေး တိုင်းတာသည့် နေရာနှင့် လုပ်ငန်းခွင် လေထု အရည်အသွေး တိုင်းတာသည့် နေရာများ တို့တွင် အနံ့အသက် အချို့ ရှိသော် လည်း GMESမှ ဝန်ထမ်းများ၏ အာရုံခံစားမှု များအရ ခံနိုင်ရည်ရှိသည့် အနေအထား တွင်ရှိပါသည်။ အနံ့အသက် အကြောင်းအသေးစိတ် ဖော်ပြချက်ကို စာပိုဒ် (၅-၂-၅) တွင် ဖော်ပြ ထားပါသည်။

**၁-၆-ခ-(၆)။ ဆူညံသံနှင့် တုန်ခါမှု**

အဆိုပါစက်ရုံ၏ ဆူညံသံ များကို လုပ်ငန်းခွင် လေထု အရည်အသွေး တိုင်းတာသည့် နေရာများတွင် တစ်ချိန်တည်း တိုင်းတာခဲ့ပြီး ရလဒ် များကို စံနှုန်း တန်ဖိုးများနှင့် နှိုင်းယှဉ် ဖော်ပြချက်ကို အောက်ပါ အတိုင်း ဖော်ပြ ထားပါသည်။

Sr. No.	Measured Places and Parameters	Unit	Measured Noise Level	Standard Guideline Values [NEQ(E)G]	Less/ More	Remark
1.	ကောက်ရိုးသိုလှောင်သည့်နေရာ ဆူညံသံအဆင့်	dBA	75.7	70	+5.7	
2.	ကောက်ရိုးချက်လုပ်သည့်အိုးအနီး ဆူညံသံအဆင့်	dBA	87.15	70	+17.15	
3.	ကော့စတစ်ဆိုဒါဖျော်သည့်ကန်အနီး ဆူညံသံအဆင့်	dBA	80.2	70	+10.2	
4.	ကောက်ရိုးချက်အိုးအတွင်းသို့ ကောက်ရိုးဖြည့်သည့်နေရာအနီး ဆူညံသံအဆင့်	dBA	81	70	+11	
5.	ပျော့ဖတ်မှရေဖယ်သည့်နေရာအနီး ဆူညံသံအဆင့်	dBA	88.9	70	+18.9	
6.	ကုန်ချောပစ္စည်းများအနီး ဆူညံသံအဆင့်	dBA	90.1	70	+20.1	
7.	ဘွိုင်လာအခန်း ဆူညံသံအဆင့်	dBA	95.35	70	+25.35	





**၁-၆-ဂ။ ဇီဝမျိုးစုံမျိုးကွဲများနှင့် ဂေဟစနစ်**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) သည် ၁၉၉၄ခုနှစ် ကတည်းကပင် စတင် တည်ဆောက်ခဲ့သည့် ဒဂုံမြို့သစ် ဆိပ်ကမ်းမြို့နယ် တွင်တည်ရှိပြီး ၂၀၀၈ခုနှစ်တွင် စက်စမ်းသပ် လည်ပတ် ခဲ့ပါသည်။ ထို့ကြောင့် စက်ရုံအပါအဝင် စက်မှုဇုန် ဧရိယာအတွင်းရှိ ဇီဝမျိုးစုံ မျိုးကွဲများ အပေါ်တွင် ဆက်နွယ် သက်ရောက်မှုများ မရှိနိုင်ပါ။ သို့သော်လည်း စက်မှုဇုန် ဧရိယာ အပြင်ဘက်ရှိ ဂေဟစနစ်ကို မထိခိုက်စေရန် စက်ရုံ အသီးသီး၏ စွန့်ပစ်ရည်များကို စံနှုန်းအတွင်း ရရှိရန် ဆောင်ရွက်ခြင်းဖြင့် ထိန်းသိမ်း ရပါသည်။

**၁-၆-ဃ။ စက်ရုံအနီးရှိလူမှုပတ်ဝန်းကျင်အခြေအနေ**

စက်ရုံအနီးရှိ လူမှု ပတ်ဝန်းကျင် အခြေအနေများကို ပညာရေး အခန်းကဏ္ဍ၊ စီးပွားရေး အခန်းကဏ္ဍနှင့် ယဉ်ကျေးမှု အမွေအနှစ် အကြောင်းအရာများ အဖြစ် ဖော်ပြ ထားပါသည်။

**၁-၆-ဃ-(၁)။ ပညာရေးကဏ္ဍ**

အဆင့်မြင့်ပညာ	- တိုင်းရင်းသား လူငယ်များ လူစွမ်းအား အရင်းအမြစ်ဖွံ့ဖြိုးရေးဒီဂရီကောလိပ်
အခြေခံပညာအထက်တန်းကျောင်း	- ၃ ကျောင်း
အခြေခံပညာအလယ်တန်းကျောင်း	- ၄ ကျောင်း
အခြေခံပညာမူလတန်းကျောင်း	- ၁၁ ကျောင်း
သူနာပြုကျောင်း	- ၁ ကျောင်း
ဘုန်းတော်ကြီးပညာရေးကျောင်း	- ၈ ကျောင်း

**၁-၆-ဃ-(၂)။ စီးပွားရေးကဏ္ဍ**

ဒဂုံမြို့သစ် (ဆိပ်ကမ်း) မြို့နယ်သည် ရန်ကုန်တိုင်း ဒေသကြီးအတွင်း တည်ရှိပြီး စက်မှုဇုန်(၂)ဇုန်၊ စပါးစိုက်ပျိုးခြင်းနှင့် မော်တော်ယာဉ် လုပ်ငန်းများ ဖွံ့ဖြိုးပါသည်။ စက်မှုဇုန်(၁)တွင် စက်မှုလုပ်ငန်း (၇၅)ခု၊ ဇုန်(၂)တွင် (၂၈)လုပ်ငန်းရှိပြီး အိမ်တွင်း စက်မှုလုပ်ငန်း (၂၁၁)ခု ရှိပါသည်။

**၁-၆-ဃ-(၃)။ ယဉ်ကျေးမှု**

ထင်ရှားသည့် ဘုရားပုထိုး၊ ဘုန်းတော်ကြီး ကျောင်းနှင့် အခြား ဘာသာရေး အဆောက်အဦးများ မရှိပါ။



၁-၆-င။ စီမံခန့်ခွဲမှုစာမေးပွဲများနှင့် ဆိုင်ရာဝန်ဆောင်မှုကုမ္ပဏီလီမိတက်အဖွဲ့၏ Nilar Pulp and Paper Mill စက်ရုံသို့ ကွင်းဆင်းလေ့လာမှုမှတ်တမ်း

၂၀၁၈ခုနှစ် ဒီဇင်ဘာလတွင် ရေးသား ပြုစု ခဲ့ပြီး ၂၀၁၉ခုနှစ် ဖေဖော်ဝါရီလ (၁၃)ရက် တွင် စက်ရုံကတင်ပြခဲ့သည့် EMPအစီအရင်ခံ စာအပေါ် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာန၏ သုံးသပ်အကြံပြုချက်အပေါ် လိုက်နာဆောင်ရွက်ချက် ဖြစ်ပါသည်။

**Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံအတွက် EMPအစီရင်ခံစာ ပြုစုရန် GMES အဖွဲ့မှ ကွင်းဆင်းမှုမှတ်တမ်း**

စဉ်	လုပ်ငန်းဆောင်ရွက်မှုဖော်ပြချက်	ရက်စွဲ	မှတ်ချက်
၁။	မြေနုမူနာကောက်ယူခြင်းနှင့်ဓာတ်ခွဲ စမ်းသပ်ခြင်း။	၁၅-၂-၂၀၁၈ ၁၈-၂-၂၀၁၈ ၂၈-၂-၂၀၁၈	နမူနာကောက်ယူခြင်း ဓာတ်ခွဲစမ်းသပ်ခြင်း ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂။	ပတ်ဝန်းကျင်လေအရည်အသွေး တိုင်းတာခြင်း။	၁၀-၄-၂၀၁၈ ၁၁-၄-၂၀၁၈ ၆-၆-၂၀၁၈	တိုင်းတာခြင်း တိုင်းတာခြင်း ရလဒ်များထုတ်ပေး ခြင်း
၃။	ဘွိုင်လာ လောင်ကျွမ်း ဓာတ်ငွေ့ အရည် အသွေး တိုင်းတာခြင်း။	၁၀-၄-၂၀၁၈ ၁၁-၄-၂၀၁၈ ၆-၆-၂၀၁၈	တိုင်းတာခြင်း တိုင်းတာခြင်း ရလဒ်များ ထုတ်ပေးခြင်း
၄။	လုပ်ငန်းခွင်လေအရည်အသွေး တိုင်းတာခြင်း။	၁၅-၂-၂၀၁၈ ၁၈-၂-၂၀၁၈	တိုင်းတာခြင်း ရလဒ်များ ထုတ်ပေးခြင်း
၅။	မြေပေါ်ရေ၊ ရေအောက်ရေ အရည်အသွေး တိုင်းတာခြင်း။	၁၅-၂-၂၀၁၈ ၂၈-၂-၂၀၁၈	နမူနာကောက်ယူခြင်း ရလဒ်များ ထုတ်ပေးခြင်း
၆။	စွန့်ပစ်ရည် အရည်အသွေး တိုင်းတာခြင်း။	၁၅-၂-၂၀၁၈ ၂၈-၂-၂၀၁၈	နမူနာကောက်ယူခြင်း ရလဒ်များ ထုတ်ပေးခြင်း
၇။	စက်ရုံသို့ အချက်အလက် ကိန်းဂဏန်းများသွား ရောက်ကောက်ယူခြင်း။	၁၅-၂-၂၀၁၈ ၁၆-၂-၂၀၁၈ ၂၆-၂-၂၀၁၈	
၈။	စက်ရုံဝန်ထမ်းများနှင့်တွေ့ဆုံညှိနှိုင်းခြင်း၊ အကြံ ပြု ချက်သဘောထားများရယူခြင်း။	၁၅-၂-၂၀၁၈	ဆွေးနွေးညှိနှိုင်းခြင်း
၉။	စက်ရုံပတ်ဝန်းကျင် ရပ်မိရဖုများ၊ ရပ် ကွက်အုပ်ချုပ်ရေးမှူး ပြည်သူလူထုနှင့် တွေ့ဆုံဆွေးနွေးခြင်း၊ အကြံပြုချက်များ ရယူခြင်း။	၁-၉-၂၀၁၈	ဆွေးနွေးညှိနှိုင်းခြင်း
၁၀။	စွန့်ပစ်ရည်နမူနာများထပ်မံရယူခြင်း၊ ဓာတ်ခွဲစမ်း သပ်ခြင်း။	၁၆-၁-၂၀၂၀ ၂၃-၁-၂၀၂၀	-နမူနာကောက် ယူခြင်း -ရလဒ်များ ထုတ်ပေးခြင်း



**၁-၇။ ထိခိုက်မှုများကိုဆန်းစစ်ခြင်းနှင့် လျော့ချရေးနည်းလမ်းများ**

၁-၇-က။ ထုတ်လွှတ်မှုများ

၁-၇-ခ။ ထုတ်လွှတ်မှုများကြောင့်ဖြစ်ပေါ်လာနိုင်သောထိခိုက်မှုများကို ဆန်းစစ်ခြင်း

၁-၇-ဂ။ ဘေးအန္တရာယ်ရှိပစ္စည်းများ

၁-၇-ဃ။ ထိခိုက်မှုများကိုလျော့နည်းစေရန်ဆောင်ရွက်ချက်များဖော်ပြခြင်း

၁-၇-င။ လျော့နည်းစေရန်ဆောင်ရွက်ချက်များနှင့် ထိခိုက်မှုအခြေအနေဆန်းစစ်ခြင်း

၁-၇-စ။ ပတ်ဝန်းကျင်လေထု၊ ရေထု၊ မြေထုနှင့် ဆူညံသံများ အတွက် အမျိုးသားပတ်ဝန်းကျင် ဆိုင်ရာ အရည်အသွေးထုတ်လွှတ်မှု လမ်းညွှန်ချက်များ

၁-၇-ဆ။ ၂၀၁၈ခုနှစ် ဒီဇင်ဘာလက ရေးသားခဲ့သည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အပေါ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၏ အကြံပြုချက်များကို လိုက်နာဆောင်ရွက်ခြင်း

**၁-၇-က။ ထုတ်လွှတ်မှုများ**

ပတ်ဝန်းကျင်သို့ ထုတ်လွှတ်မှုများ တစ်နည်းအားဖြင့် အဆိုပါ စက်ရုံကြောင့် ထိခိုက်မှု များမှာ -

၁-၇-က-(၁)။ လေထုအတွင်းသို့ထုတ်လွှတ်မှုများ

၁-၇-က-(၂)။ ရေထုအတွင်းသို့ထုတ်လွှတ်မှုများ

၁-၇-က-(၃)။ မြေထုအတွင်းသို့ထုတ်လွှတ်မှုများ

၁-၇-က-(၄)။ ဆူညံသံနှင့်တုန်ခါမှုများ

၁-၇-က-(၅)။ အနံ့အသက်

**၁-၇-က-(၁)။ လေထုအတွင်းသို့ထုတ်လွှတ်မှုများ**

လေထု အတွင်းသို့ ထုတ်လွှတ်မှု များမှာ - သယ်ယူ ပို့ဆောင်ရေး ယာဉ်များမှ ထုတ်လွှတ် အခိုးအငွေ့များ၊ အရန် လျှပ်စစ် ထုတ်စက်များမှ ထုတ်လွှတ် အခိုးအငွေ့ များ၊ ဓာတ်ငွေ့ ယိုစိမ့်မှုများ၊ ကုန်ကြမ်း ကောက်ရိုးများ သယ်ယူခြင်းနှင့် သိုလှောင်ခြင်းမှ ဖုန်မှုန့်နှင့် အမှုန်၏ အမွှားများ ထွက်ရှိခြင်း၊ ကုန်ကြမ်း ကောက်ရိုးများ ဖြတ်တောက်ခြင်း မှ ဖုန်မှုန့်နှင့် အမှုန်အမွှားများ ထွက်ရှိခြင်း၊ ဖြတ်တောက်ပြီး ကောက်ရိုး များကို ဆန် ကာချခြင်းမှ ဖုန်မှုန့်နှင့် အမှုန်အမွှားများ ထွက်ရှိခြင်း၊ ကောက်ရိုး ချက်အိုး အဖုံးဖွင့်ခြင်းမှ ထုတ်လွှတ် အခိုးအငွေ့များ၊ အခြောက်ခံပြီး ပျော့ဖတ်များ ထုတ်လုပ်ခြင်းမှ ထုတ်လွှတ် အခိုးအငွေ့များ၊ ဘျိုင်လာ ခေါင်းတိုင်မှ ထွက်ရှိသော လောင်ကျွမ်း ဓာတ်ငွေ့များ၊ ဘျိုင်လာ ခေါင်းတိုင်နှင့် မီးခြမ်းမှ ထွက်ရှိသော ဖုန်မှုန့်နှင့် အမှုန်အမွှားများ၊ စပါးခွံ/ လွှစာ



မှုန့်များ လောင်ကျွမ်းရာမှ ထွက်ရှိသော ပြာမှုန့်များနှင့် စားဖိုဆောင်မှ ထွက်ရှိသော အခိုးအငွေ့အနံ့အသက်များ တို့ဖြစ်ကြပါသည်။ အသေးစိတ် ရှင်းလင်း ဖော်ပြချက် များကို စာပိုဒ် (၆-၁-က)တွင် ဖော်ပြထားပါသည်။

**၁-၇-က-(၂)။ ရေထုအတွင်းသို့ထုတ်လွှတ်မှုများ**

ရေထုအတွင်းသို့ ထုတ်လွှတ်မှု များမှာ - လုပ်သား ဝန်ထမ်းများ အသုံးပြုခြင်းမှ ထွက်ရှိသော စွန့်ပစ်ရည်များ၊ စက်ပစ္စည်းများနှင့် ကန်များဆေးကြော ရာမှ ထွက်ရှိသော ဆေးကြောရေများ၊ ထရန်စဖော်မာဆီ၊ စက်ဆီချောဆီနှင့် ဘက်ထရီ အက်ဆစ်များ မတော်တဆ ဖိတ်စင်မှုများ၊ ကောက်ရိုးများ ဆေးကြောရာမှ ထွက်ရှိသော ဆေးကြောရေများ၊ လှုပ်ခါ ဆန်ကာနှင့် ရေဖယ်သော ကွန်ဗေယာ များမှ မတော်တဆ ဖိတ်စင်သော အရည်များ၊ ပျော့ဖတ် ဆေးကြောရေများ၊ အခိုးအငွေ့နှင့် အမှုန်အမွှားများ ပျော်ဝင်နေသော မိုးရေများနှင့် ယင်းမိုးရေနှင့် အတူ ပါဝင်လာသော အရည်များ၊ ဘွိုင်လာ ဘလိုဒေါင်းရေများ၊ ရေသန့်စင်မှု စနစ်မှ ထွက်ရှိသော စွန့်ပစ်ရည်များ၊ စားဖိုဆောင်မှ ထွက်ရှိသော စွန့်ပစ်ရည်များနှင့် စွန့်ပစ်ရည် သန့်စင်မှု စနစ်မှ ထွက်ရှိသော စွန့်ပစ်ရည်များ တို့ဖြစ်ကြပါသည်။ အသေးစိတ် ရှင်းလင်း ဖော်ပြချက် များကို စာပိုဒ် ၆-၁-ခတွင် ဖော်ပြထားပါသည်။

**၁-၇-က-(၃)။ မြေထုအတွင်းသို့ထုတ်လွှတ်မှုများ**

မြေထုအတွင်းသို့ ထုတ်လွှတ်မှု များမှာ - လုပ်သားဝန်ထမ်းများ အသုံးပြုပြီး စွန့်ပစ် အစိုင်အခဲများ၊ ရုံးလုပ်ငန်းမှ အသုံးပြုပြီး စာရွက် အပိုင်းအစများ၊ ကောက်ရိုး ပျော့ဖတ် ထုတ်လုပ်ခြင်းမှ အသုံးပြုပြီး ထုပ်ပိုးပစ္စည်း အပိုင်းအစများ၊ ကောက်ရိုး များကို သယ်ယူ ပို့ဆောင်ခြင်း၊ ဖြတ်တောက်ခြင်းနှင့် ဆန်ကာချခြင်း လုပ်ငန်းများမှ ထွက်ရှိသော ဖုန်မှုန့်နှင့် အမှုန်အမွှားများ၊ စွန့်ပစ်ရည် များတွင် ပါဝင်လာသော အစိုင်အခဲများ၊ ရေထု၊ လေထုများမှ ထွက်ရှိသော အစိုင်အခဲများ၊ ဘွိုင်လာမှ စပါးခွံ/ လွှစာမှုန့် ပြာမှုန့်များ လွင့်စင်မှုများ၊ ဘွိုင်လာ မီးခြမ်းမှ ပြာများနှင့် စားဖိုဆောင်မှ ထွက်ရှိသော စွန့်ပစ် အစိုင် အခဲစွန့်ပစ် ပစ္စည်းများ တို့ဖြစ်ကြပါသည်။ အသေးစိတ် ရှင်းလင်း ဖော်ပြချက် များကို စာပိုဒ် (၆-၁-ဂ) တွင် ဖော်ပြထားပါသည်။

**၁-၇-က-(၄)။ ဆူညံသံနှင့်တုန်ခါမှုများ**

ပတ်ဝန်းကျင်ကို ထိခိုက်စေနိုင်သော ဆူညံသံနှင့် တုန်ခါမှုများမှာ - ထုတ်လုပ်ရေးစက် ပစ္စည်းများ မောင်းနှင်ခြင်း များကြောင့် လည်းကောင်း၊ သယ်ယူ ပို့ဆောင်ရေး ယာဉ်များနှင့် အရန် လျှပ်စစ်ထုတ်စက်များ မောင်းနှင်မှု များကြောင့် လည်းကောင်း ဖြစ်ပေါ်နိုင်ပါသည်။ အသေးစိတ် ရှင်းလင်း ဖော်ပြချက်များကို စာပိုဒ် (၆-၁-ဃ) တွင် ဖော်ပြထားပါသည်။



၁-၇-က-(၅)။ အနံ့အသက်

ပတ်ဝန်းကျင်ကို ထိခိုက်စေနိုင်သော အနံ့အသက်များမှာ - မော်တော် ယာဉ်များ ၏ အိပ်ဇေပိုက်များမှ ထွက်ရှိသော အနံ့အသက်များ၊ အရန် လျှပ်စစ် ထုတ်စက်များ ၏အိပ်ဇေပိုက်များမှထွက်ရှိသော အနံ့အသက်များ၊ black liquor၏ အနံ့အသက်များ၊ ကောက်ရိုး ချက်အိုးမှ ကော့စတစ်အနံ့များ၊ ဘွိုင်လာမှ လောင်ကျွမ်း အနံ့အသက်များနှင့် စားဖိုဆောင်မှ ထွက်ရှိသော အနံ့အသက်များ တို့ဖြစ်ကြပါသည်။ အသေးစိတ် ရှင်းလင်း ဖော်ပြချက် များကို စာပိုဒ် (၆-၁-င)တွင် ဖော်ပြ ထားပါသည်။

၁-၇-ခ။ ထုတ်လွှတ်မှုများကြောင့်ဖြစ်ပေါ်လာနိုင်သောထိခိုက်မှုများကိုဆန်းစစ်ခြင်း

Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ၏ ကုန်ထုတ်လုပ်မှု ဖြန့်ဖြူး ရောင်းချမှုများကြောင့် ထုတ်လွှတ်မှုများ၏ ထိခိုက်မှုများကို အောက်ပါဇယားဖြင့် ဆန်းစစ် တင်ပြ ထား ပါသည်။

ညစ်ညမ်းမှု	အရင်းအမြစ်	အကြောင်းအရင်းဖော်ပြချက်များ	ထိခိုက်မှု
<b>လေထုညစ်ညမ်းမှု</b>			
-အဆိပ်အ တောက်နှင့် ကမ္ဘာကြီး ပူနွေး သော ဓာတ်ငွေ့ များ၊ အငွေ့ပျံနိုင် သော အော်ဂဲနစ် ဓာတ် ပေါင်းများ	-မော်တော်ယာဉ်များ နှင့်အရန်လျှပ်စစ်ထုတ် စက်များ၏ အိပ်ဇေပိုက်မှ ထုတ်လွှတ်မှု များ၊ဘွိုင်လာလောင်ကျွမ်း ဓာတ်ငွေ့များ၊ ထရန်စဖော်မာဆီ၊ အငွေ့ပျံနိုင်မှုများ၊ စားဖိုဆောင်မှ အနံ့များ	-မော်တော်ယာဉ်များ နှင့်အရန်လျှပ်စစ်ထုတ် စက်များ၏ အိပ်ဇေပိုက်မှ ထုတ်လွှတ်မှု များ၊ဘွိုင်လာလောင်ကျွမ်း ဓာတ်ငွေ့များ၊ ထရန်စဖော်မာဆီ၊ အငွေ့ပျံနိုင်မှုများ၊ စားဖိုဆောင်မှ အနံ့များ	-ကာဗွန်ဒိုင်အောက်ဆိုဒ်ငွေ့သည် ကမ္ဘာကြီးပူနွေးစေပါသည်။ ဆာဗာဒိုင်အောက်ဆိုဒ်၊ ကာဗွန်မိုနောက်ဆိုဒ် ဓာတ်ငွေ့များ၊ အငွေ့ပျံနိုင်သော အော်ဂဲနစ် ဓာတ်ပေါင်းများသည် အဆိပ်ဓာတ်ငွေ့ များဖြစ်ကြပါသည်။ ကာဗွန်မှုန့်များသည် အသက်ရှူလမ်းကြောင်းဆိုင်ရာ ရောဂါများ ဖြစ်စေနိုင်ပါသည်။
-ရေခိုးရေငွေ့နှင့် အနံ့ အသက်များ	-ကော့စတစ်ရည် ဖျော် ရာမှထွက်ရှိသောကော့စတစ်အနံ့အသက်များ၊ ဒီဇယ်အဖုံးဖွင့် ရာမှ အနံ့အသက်များ ပျော့ ဖတ်စက္ကူအခြောက် ခံရာမှ ထွက်ရှိသော အနံ့အသက်များ	-ကော့စတစ်ရည် ဖျော် ရာမှထွက်ရှိသောကော့စတစ်အနံ့အသက်များ၊ ဒီဇယ်အဖုံးဖွင့် ရာမှ အနံ့အသက်များ ပျော့ ဖတ်စက္ကူအခြောက် ခံရာမှ ထွက်ရှိသော အနံ့အသက်များ	-ကော့စတစ်အနံ့နှင့် လင်ဂနင်အနံ့များ သည် မအိမသာ ဖြစ်စေသည်။



**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

-ဖုန်မှုန့်နှင့်သေးငယ်သောအစိုင်ခဲများ	-ကောက်ရိုးသယ်ခြင်း၊ ခုတ်ထပ်ခြင်း၊ ဆန်ကာချခြင်းတို့တွင် ထွက်ရှိသောအမှုန်အမွှာ များ	-ကောက်ရိုးသယ်ခြင်း၊ ခုတ်ထပ်ခြင်း၊ ဆန်ကာ ချခြင်းတို့တွင် ထွက်ရှိသောအမှုန်အမွှာ များ	-အသက်ရှူလမ်းကြောင်းဆိုင်ရာရောဂါ များဖြစ်စေနိုင်ပါသည်။
<b>ရေထုညစ်ညမ်းခြင်း</b>			
-စွန့်ပစ်ရည်များ	-ဝန်ထမ်းများ အသုံးပြုရာမှ ထွက်ရှိသော စွန့်ပစ်ရည်များ၊ ကောက်ရိုး ဆေးရေ များ၊ စက်ပစ္စည်း၊ တိုင်ကီများ ဆေးကြောရေများ၊ ရေဆေးပြီးကောက်ရိုးများရေဖယ်ထုတ်ခြင်းမှဖိတ် စင်ရေများ၊စွန့်ပစ်ရည်သန့်စင် စနစ်မှသန့်စင်ပြီးစွန့်ပစ်ရည် များ၊ ဘွိုင်လာဘာလိုး ဒေါင်းရေများ၊	-BOD, COD, TSSမြင့်မားသော စွန့်ပစ်ရည်များ ထွက်ရှိခြင်း၊	-ပတ်ဝန်းကျင်ဂေဟစနစ်ကို ထိခိုက်စေနိုင် ပါသည်။
-ဖိတ်စင်မှုများ	-ဘတ်ထရီ အက်ဆစ်၊ စက်ဆီ၊ ချောဆီ၊ ဒီဇယ် ဆီများတို့ ဖိတ်စင်မှုများ၊	-ဘတ်ထရီအက်ဆစ်၊ စက်ဆီ၊ချောဆီ၊ဒီဇယ် ဆီဖြည့်တင်း လဲလှယ် ခြင်း၊	-ရေထု ချဉ်ဖန် ကိန်း များကို ပြောင်းလဲစေ ပါသည်။ စက်ဆီ၊ ချောဆီ၊ ဒီဇယ်ဆီ များတို့သည် ရေထုနှင့် မြေထု အတွင်းသို့ လေနှင့် အလင်းရောင် ဝင်ရောက်မှုကို လျော့နည်း စေပါသည်။
<b>မြေထုညစ်ညမ်း မှုများ</b>			
-မြေထုအတွင်းသို့ ရောက်ရှိခြင်း	-ကောက်ရိုးသယ်၊ ခုတ်ထပ်၊ ဆန် ကာချ ရာမှ အရွယ်ငယ် ကောက်ရိုးများ၊ သဲဖုန် မှုန့်များ၊ စပါးခွံ၊ လွှစာမှုန့်ပြာများ၊ ဖြိုကွဲရန် ခက်ခဲသော ထုပ်ပိုး ပစ္စည်းများ၊	-လုပ်ငန်းစဉ်ဘွိုင်လာမီးထိုးခြင်း၊ ထုပ်ပိုးပစ္စည်းများ၊ ပျက်စီး စနစ် မကျ စွန့်ပစ် ခြင်း၊	-မြေ၏အခြေအနေကို ပြောင်းလဲစေပါသည်။ ပလတ်စတစ်ပစ္စည်းများ သည်ဆွေးမြေ့ရန်ခက်ခဲပါသည်။
<b>ဆူညံသံနှင့်တုန်ခါ မှုများ</b>			
-အသံဆူညံမှု	-အရန်လျှပ်စစ်ထုတ်စက်၊ ကောက်ရိုးခုတ်ထပ်စက်၊ပန့်များ၊ အခြေခံစက် များမောင်းနှင်ခြင်း၊ မော်တော်ယာဉ် များ မောင်းနှင်ခြင်း၊	-လုပ်ငန်းစဉ်လုပ်ကိုင် ခြင်း၊	-မအီမသာခံစာရခြင်း၊ အကြား ဆိုင်ရာ ရောဂါ ရရှိနိုင် ပါသည်။
-တုန်ခါမှု	-ကောက်ရိုး ဆန်ကာချ ခြင်း၊		



**၁-၇-ဂ။ ဘေးအန္တရာယ်ရှိပစ္စည်းများ**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံတွင် အန္တရာယ်ရှိ ပစ္စည်းများ အဖြစ် -

- ကော့စတစ်ဆိုဒါ
- စက်ဆီ၊ ချောဆီ၊ ဒီဇယ်ဆီ
- ဘက်ထရီအက်ဆစ် တို့ရှိပါသည်။

ဘေးအန္တရာယ်ရှိထုတ်လွှတ်မှုများအဖြစ်-

- ကာဗွန်ဒိုင်အောက်ဆိုဒ် ဓာတ်ငွေ့
- ဆားဖျော်ရည်
- လောင်ကျွမ်းဓာတ်ငွေ့
- ကာဗွန်မိုနောက်ဆိုဒ် ဓာတ်ငွေ့
- ဆာလဖာဒိုင်အောက်ဆိုဒ်ဓာတ်ငွေ့
- ထရန်စဖော်မာဆီများ တို့တွေ့ရပါသည်။

ကော့စတစ်ဆိုဒါ၊ စက်ဆီ၊ ချောဆီ၊ ဒီဇယ်ဆီတို့၏ ဘေးအန္တရာယ်ရှိပုံ အကျဉ်းကို အပိုဒ် ( ၆-၃) တွင် ဖော်ပြပေးပြီးအသေးစိတ်ကို နောက်ဆက်တွဲ(၁)တွင် ဖော်ပြထားပါသည်။ ထုတ်လွှတ် အစိုးအငွေ့များ၏ အန္တရာယ်ရှိ ပုံကိုလည်း အကျဉ်းချုပ် တင်ပြထားပါသည်။

**၁-၇-ဃ။ ထိခိုက်မှုများကိုလျော့နည်းစေရန်ဆောင်ရွက်ချက်များ**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ၏ ပတ်ဝန်းကျင် အပေါ် ဆိုးကျိုး သက်ရောက်မှုများဖြစ်သည့် လေ၊ ရေ၊ မြေနှင့် ဆူညံသံတို့ အပေါ် သက်ရောက်မှုများကို လျော့နည်း စေရန် ဆောင်ရွက်မည့် နည်းလမ်းများကို တင်ပြ ထားပါသည်။

**၁-၇-ဃ-(၁)။ လေထုအပေါ် ညစ်ညမ်းမှုများကို လျော့နည်းစေရန် စီစဉ်ဆောင်ရွက်ခြင်း**

သက်ရောက်မှုအရင်းအမြစ်	လျော့နည်းစေရန်ဆောင်ရွက်မှု
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-မော်တော်ယာဉ်များ၏ ထုတ်လွှတ်အခိုးအငွေ့ အနံ့အသက်များ	-စက်ရုံ၏ ကုန်ကြမ်းကုန်ချော၊ လောင်စာများ သယ်ယူခြင်း ရွှေ့ပြောင်းခြင်းများတွင် အသုံးပြု သော ယာဉ် ယန္တရားများ၏ ထုတ်လွှတ် အခိုး အငွေ့များ ဖြစ်သော ကာဗွန်ဒိုင် အောက်ဆိုဒ်၊ ကာဗွန်မို နောက်ဆိုဒ်၊ ဆာဖာဒိုင် အောက်ဆိုဒ် နှင့် ကာဗွန်အမှုန်တို့ ထွက်ရှိခြင်းများကို လျော့နည်းစေရန် ယာဉ်သုံးစွဲမှုကို စနစ်ကျစေခြင်း၊ ပုံမှန်ပြုပြင်မှုများ ဆောင်ရွက်ခြင်း၊ အရည် အသွေးပြည့်သော လောင်စာ ဆီများ အသုံးပြုခြင်း၊ အင်ဂျင်ပါဝါစွမ်းရည်ပြည့်စေခြင်း တို့ဆောင်ရွက် ပါသည်။ ထွက်ရှိ သည့် ဓာတ်ငွေ့များ စုတ်ယူ နိုင်ရန် သစ်ပင်များစိုက်ပျိုးထား ပါသည်။
-အရန်လျှပ်စစ်ထုတ်စက်မှထုတ်လွှတ်မှုများ	-လျှပ်စစ်ဓာတ်အားအပြင် လိုအပ်သည့် အခါ တွင် အရေးပေါ် မောင်းနှင်သောအရန်လျှပ်စစ် ထုတ်စက်မှ ထုတ်လွှတ်သော အခိုးအငွေ့များ ကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေရန် စက်၏ စွမ်းရည် ပြည့်ဝစေခြင်း၊ အရည်အသွေး ကောင်းမွန် သော လောင်စာဆီ အသုံးပြုခြင်း၊ လုပ်ငန်း ခွင်နှင့် အနည်း ဆုံးပေ(၂၀)ခန့် ကွာထား ခြင်းတို့ ဆောင်ရွက်ချက် ရှိပါသည်။
-ဓာတ်ငွေ့ယိုစိပ်ခြင်း	-ထရန်စဖော်မာနှင့် လေအေးစက်များမှ ဓာတ်ငွေ့ယိုစိပ်မှု လျော့နည်းစေရန် ပုံမှန်စစ်ဆေး ပုံမှန်စစ် ဆေး ပြုပြင်ခြင်း safeguard များ ဆောင်ရွက်လျက်ရှိ ပါသည်။
-အမှုန်အမွှားများပျံ့နှံ့ခြင်း	-ကောက်ရိုးသယ်ဆောင်ခြင်း၊ သိုလှောင်ခြင်း၊စုတ်ထစ်ခြင်း၊ ဆန်ကာချခြင်းများ၊ ဘွိုင်လာ ပြာများ မီးခြမ်း များမှ ထွက်ရှိသော အမှုန်အမွှား များကို လေဟာနယ် ချိန်ကာတွင် စုယူခြင်း၊ အရွယ်ငယ် ကောက်ရိုး ဖြတ်စများကို ဘွိုင်လာ တွင်လောင်စာ အဖြစ် အသုံးပြုခြင်း၊ ဘွိုင်လာ ပြာ များကို ဆိုင်ကလုံး၊ ရေဖြန်းစနစ်တို့ဖြင့် ဖြန်းချ ရယူခြင်း၊ မီးကြမ်းမှ ပြာများကို စက်မှုရန် ကော်မတီ၊ YCDC တို့၏လမ်းညွှန်မှုဖြင့် စွန့်ပစ် ခြင်းများ ဆောင်ရွက်ခြင်းဖြင့် လျော့နည်းအောင် ဆောင်ရွက် လျက် ရှိပါသည်။
-ကော့စတစ်ရည်ဖျော်ခြင်း	-ကော့စတစ်ဆိုဒါ ရေဖျော်ရာတွင် အပူဓာတ် ထွက်ရှိမှုကြောင့် အခိုးအငွေ့ အနံ့အသက်များ ထွက်ရှိမှုလျော့နည်းစေရန် အချိန်ယူ၍ ဖြေညင်း စွာ ဖျော်ခြင်းဖြင့် အပူချိန်မြင့်တက်မှုကို လျော့ကျ စေပြီး အခိုးအငွေ့ အနံ့အသက်များ လေထု အတွင်း သို့ ရောက်ရှိ လျော့နည်းစေပါ သည်။
-ကောက်ရိုးကျိုချက်အိုးမှအခိုးအငွေ့များ	-ကောက်ရိုး ကျိုချက်အိုး တွင် ကောက်ရိုးအပိုင်း အစများ ကော့စတစ်ဆိုဒါ ဖျော်ရည်နှင့် ရေနွေး ငွေ့တို့ ချက်လုပ်ရာတွင် ကျိုချက်အိုး လေထုတ်ခြင်း၊ ချက်လုပ်ခြင်း ပြီးစီး၍ ဖွင့်ထုတ် ရာတွင် ထွက်ရှိ အခိုးအငွေ့များ လျော့ နည်းစေရန် အဆင့် နှစ်ဆင့်ဖြင့် ပြန်လည်ဖမ်းယူ ပြီး အိုးအတွင်း ထည့်ခြင်း၊ ဖြေး ညင်းစွာ ဖွင့်ထုတ် ခြင်းများဖြင့် လျော့နည်း စေရန် ဆောင်ရွက် လျက်ရှိပါသည်။ အသုံးပြုသော စက် ကိရိယာ ပစ္စည်းများကို အပိုဒ်(၆-၄)တွင် ဖော်ပြ ထားပါသည်။
-ဘွိုင်လာမှ လောင်ကျွမ်း ဓာတ်ငွေ့ များနှင့် အမှုန် အမွှား များ	-ဘွိုင်လာတွင် စပါးခွံနှင့် လွှစာမှုန့်များ လောင်ကျွမ်းရာတွင် ပြည့်ဝစွာ လောင်ကျွမ်း စေရန် ဆောင်ရွက်ခြင်း၊ လောင်ကျွမ်း ဓာတ်ငွေ့များကို ဆိုင်ကလုံးအမှုန် ဖမ်းစက်ဖြင့် ဖမ်းယူခြင်း၊ ရေဖြန်းအမှုန် ဖမ်းစက်ဖြင့် ဖမ်းယူခြင်းများ ဆောင်ရွက် ခြင်းဖြင့် ထိခိုက်မှုများ လျော့နည်း စေပါသည်။
-ဘွိုင်လာမီးခြမ်းမှပြာများ	-ဘွိုင်လာမီးခြမ်းမှ ထွက်ရှိသော ပြာများကို စနစ်တကျ ထုတ် ယူပြီး စက်မှုရန် ကော်မတီ၊ YCDC တို့၏ လမ်းညွှန်မှုဖြင့် စွန့်ပစ် ခြင်းများ ဆောင်ရွက် ခြင်းဖြင့် လျော့နည်း အောင် ဆောင်ရွက်လျက် ရှိပါသည်။
-စားဖိုဆောင်မှအနံ့အသက်အခိုးအငွေ့များ	-စားဖိုဆောင်မီးဖိုမှ အနံ့အသက်များ၊ အခိုး အငွေ့များ ကို လေဝင် လေထွက် ကောင်းစေ ခြင်း၊ ဝန်ထမ်းများလုပ်ငန်းချိန် နှင့်ရောင်လွှဲချက် ပြုတ်ခြင်း ဖြင့် ထိခိုက်မှုများကို လျော့နည်း စေပါသည်။





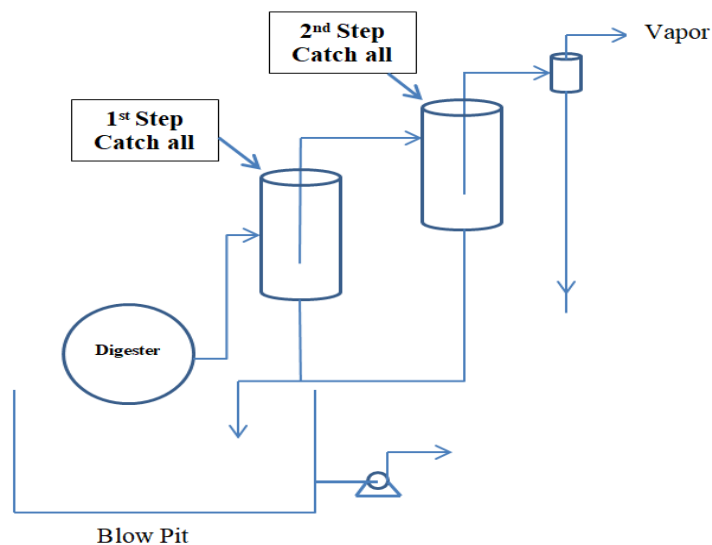
၁-၇-ဃ-(၁)-(၁)။ ၂၀၁၈ခုနှစ် ဒီဇင်ဘာလက ရေးသားခဲ့သည့် EMPအစီရင်ခံစာအပေါ်ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၏ အကြံပြုချက် (၆-ခ) အပေါ်တင်ပြခြင်း

သုံးသပ်အကြံပြုချက်

လောင်ကျွမ်းမီးခြမ်းမှ အခိုးအငွေ့ ဓာတ်ငွေ့များအပေါ် စီစဉ်ဆောင်ရွက်ချက်ကို ဖော်ပြခြင်း

လောင်ကျွမ်းမီးခြမ်းမှ လောင်ကျွမ်း ထွက်ရှိသော အခိုးအငွေ့၊ ဓာတ်ငွေ့ အနံ့အသက်များကို ဆိုင်းကလုံး အမှုန် ဖမ်းစက် ကိရိယာ၊ ရေဖျန်းအမှုန်ဖမ်း ကိရိယာဖြင့် ဖမ်းယူခြင်းဖြင့် လည်းကောင်း၊ ခေါင်းတိုင်းကို မြင့်မားစွာ တပ်ဆင် ထားခြင်းဖြင့် စီစဉ်ဆောင်ရွက်ထားပါသည်။

ကောက်ရိုး ကျိုချက်အိုးမှ ထုတ်လွှတ်သည့် အခိုးအငွေ့ များကို ဖမ်းယူ သည့် နှစ်ဆင့်ဖမ်း စနစ်၏ လုပ်ဆောင်ပုံကို အောက်ပါပုံဖြင့် ရှင်းလင်း တင်ပြ ထားပါသည်။



အခိုးအငွေ့များကိုဖမ်းယူသည့်နှစ်ဆင့်ဖမ်းစနစ်၏လုပ်ဆောင်ပုံ။

**၁-၇-ဃ-(၂)။ ရေထုအပေါ်ညစ်ညမ်းမှုများကိုလျော့ချသည့်နည်းစနစ်များ**

သက်ရောက်မှုအရင်းအမြစ်	လျော့နည်းစေရန်ဆောင်ရွက်မှု
-ဝန်ထမ်းလုပ်သားများ နေ့စဉ်သုံးစွဲရာမှ ထွက်ရှိသော စွန့်ပစ်ရည်များ	- ဝန်ထမ်းလုပ်သားများ အသုံးပြုရာမှ ထွက်ရှိသော စွန့်ပစ်ရည်များတို့သည် Septic tank များတွင် စုဆောင်းပြီး သဘာဝအလျောက် ဖြိုခွဲခြင်း၊ ဝန်ထမ်းများ ရေသုံးစွဲမှုကို လိုအပ်သည်ထက်ပိုမိုသုံးစေရန် ပညာပေး စည်းရုံးခြင်းဖြင့် ထိခိုက်မှု လျော့နည်း စေပါသည်။
-ထရန်စဖော်မာဆီ၊ စက်ဆီ၊ ချောဆီ၊ နှင့် ဘက်ထရီ အက်ဆစ်များ	-ထရန်စဖော်မာဆီ၊ စက်ဆီ၊ ချောဆီ၊ ဘက်ထရီ အက်ဆစ် များလဲလှယ်ဖြည့်တင်းရာတွင် ဖိတ်စင်မှုမရှိ စေရန် ကြီးကြပ် ခြင်း၊ စနစ်တကျ စုစည်းပြီး ထုခွဲရောင်းချ ခြင်း၊ မရပါက YCDCတို့၏လမ်းညွှန်မှုဖြင့် စွန့်ပစ် ခြင်းများ ဆောင်ရွက် ခြင်း ဖြင့် ထိခိုက်မှု လျော့နည်း စေပါသည်။
-စက်ပစ္စည်းများ၊ တိုင်ကီများ၊ ကောက်ရိုး၊ ပျော့ဖတ် ဆေးရည်များ	-စွန့်ပစ်ရည် သန့်စင်သည့် စနစ်တွင် သန့်စင်ပြီးမှ စွန့်ပစ် ခြင်းဖြင့် ထိခိုက်မှုများကိုလျော့နည်းစေပါသည်။
-ဘွိုင်လာဘာလိုးဒေါင်းရေ	-လိုအပ်သည်ထက် ပိုမိုထုတ်ရန် စည်းရုံး ပညာပေးခြင်း ဖြင့် ထိခိုက်မှုများကို လျော့နည်းစေပါသည်။
-စွန့်ပစ်ရည်သန့်စင်သည့်စနစ်မှစွန့်ပစ်ရည်များ	-ယခုလက်ရှိ ဆောင်ရွက် လျက်ရှိသည့် စွန့်ပစ်ရည် သန့်စင်မှု စနစ်ဖြင့် လေမဲ့မကူဇီဝ သက်ရှိဖြင့် ဖြိုဖျက် ခြင်း၊ အနယ် ထိုင်ခြင်း၊ ဓာတု ပစ္စည်း များဖြင့် အနယ်ထိုင် ခြင်း၊ လေလို အကူဇီဝ သက်ရှိ များဖြင့် ဖြိုဖျက်ခြင်း၊ အနယ်ထိုင် ဖယ်ရှားခြင်း စနစ်များ ဖြင့် သန့်စင် ခြင်းဖြင့် BOD, COD, TSS တန်ဖိုးများ လျော့ချ လျက် ရှိပါသည်။

၂၀၁၈ခုနှစ် ဩဂုတ်လတွင် စွန့်ပစ်ရည်များ နမူနာရယူ ဓာတ်ခွဲမှုရလဒ်များကို သတ်မှတ်စံနှုန်းများအတွင်း မကျရောက်ကြောင်းတွေ့ရှိရပါသည်။ စက်ရုံမှ အပူချိန်နိမ့် မီးရှို့ဖျက်ဆီးခြင်း၊ အငွေ့ပျံ့စေခြင်း၊ Dissolved air floatation စနစ်များကို ဆက်လက်လုပ်ကိုင်မည် ဖြစ်ကြောင်း တင်ပြထားပါသည်။

၂၀၁၈ ဒီဇင်ဘာလတွင် ရေးသားပြုစုခဲ့သည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် အပေါ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၏ အကြံပြုချက် အရ စွန့်ပစ်ရည်၏ ပါရာမီတာများ အားလုံး တိုင်းတာရန် (၂၀၂၀) ဇန်နဝါရီလ (၁၆)ရက်တွင် စွန့်ပစ်ရည်များ ထပ်မံကောက်ယူ ဓာတ်ခွဲ စမ်းသပ်ပြီး NEQ(E)G စံနှုန်းများဖြင့် အောက်ပါအတိုင်း နှိုင်းယှဉ် တင်ပြထားပါသည်။



**Comparison Data of Analyzed Results of Wastewater (Factory Outlet) with Guideline Values of Pulp and Paper Mill unbleached kraft Pulp Integrated under National Environmental Quality (Emission) Guidelines Standards**

Sr. No.	Parameter	Unit	Analysis result of wastewater (Factory outlet)	Guideline Values of Pulp and Paper (unbleached kraft Pulp Integrated)	Less/ More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	660	0.7	+ 659.3	
2.	Chemical Oxygen Demand	Kg/ADt	1330	10	+ 1320	
3.	pH	-	8	6~9	Between standard	
4.	Total Nitrogen	Kg/ADt	12	0.2	+ 11.8	
5.	Total Phosphate	Kg/ADt	2.1	0.02	+ 2.08	
6.	Total Suspended Solids	Kg/ADt	413	1	+ 412	

စွန့်ပစ်ရည် နမူနာ ရယူသည့် ဓာတ်ပုံ မှတ်တမ်းများ၊ နေရာဖော်ပြချက်၊ ရလဒ်များ၊ စွန့်ထုတ်သည့် နေရာ၊ NEQ(E)G စံနှုန်းများဖြင့် နှိုင်းယှဉ် ဖော်ပြချက်များကို အပိုဒ် (၆-၄-၂)တွင် အသေးစိတ် တင်ပြထားပါသည်။



**၁-၇-ဃ(၃)။ မြေထုအပေါ်ညစ်ညမ်းမှုများကို လျော့ချသည့်နည်းလမ်းများ**

သက်ရောက်မှုနည်းလမ်းများ	လျော့ချစေရန်ဆောင်ရွက်ချက်
-အထွေထွေစွန့်ပစ်ပစ္စည်းများ	-အသုံးပြုပြီး ပစ္စည်းများ (ရုံးလုပ်ငန်းသုံး+ ဝန်ထမ်းများ တကိုယ်ရည် သုံးပြီး ပစ္စည်း များ) တို့ကို အစုံပါ အမှိုက်ပုံးများတွင် စုဆောင်း၍ ဘွိုင်လာတွင် မီးရှို့ခြင်း၊ မရပါက စည်ပင်သာယာ ခွင့်ပြုသည့် နေရာတွင် စွန့်ပစ်ခြင်း။
-ကောက်ရိုးသယ်၊ ချ၊ ခုတ်ထစ်၊ ဆန်ကာ ချရာ မှထွက်ရှိသည့် အမှုန်များ	-ထွက်ရှိသည့် ကောက်ရိုး အမှုန်များကို လေ ဟာခွဲ စနစ်ဖြင့် စုတ်ယူပြီး မီးရှို့ခြင်း၊ စည်ပင်သာယာ ခွင့်ပြုသည့် နေရာတွင် စွန့်ပစ်ခြင်း။
-စွန့်ပစ်ရည်တွင်ပါဝင်လာသော အစိုင်အခဲများ	-ကောက်ရိုး ဆေးရေများ၊ ပျော့ဖတ်ဆေး ရည် များတို့တွင် ပါဝင်လာသော အစိုင်အခဲ များကို အနယ်ထိုင်ကန် များတွင် စုဆေး ခြင်း၊ များလာ ပါက စုယူပြီး စည်ပင်သာယာ သတ်မှတ်သည့် နေရာတွင် စွန့်ပစ်ခြင်း။
-ထုပ်ပိုးပစ္စည်းများ	-ကုန်ကြမ်း ထုပ်ပိုးပစ္စည်းများ၊ ထုတ်လုပ်စဉ် ကုန်ချော ထုပ်ပိုးပစ္စည်းများ အပျက် အစီး များတို့ကို စုယူပြီး ထုခွဲ ရောင်းချခြင်း၊ မရပါက စည်ပင်သာ ယာရေး ကော်မတီ ခွင့်ပြု သည့် နေရာတွင် စွန့်ပစ်ခြင်း။
-စပါးခွံ/လွှာပြာများ	-ဘွိုင်လာမှ ထွက်ရှိသော စပါးခွံပြာ/ လွှာ ပြာ များတို့ကို စနစ်တကျ စုယူပြီး စည်ပင် သာယာရေး ကော်မတီ ခွင့်ပြုသည့် နေရာ တွင် စွန့်ပစ်ခြင်း။
-ပျော့ဖတ်စက္ကူဖြတ်စညှပ်များ	-ပျော့ဖတ်စက္ကူများကို ဖြတ်တောက်ရာတွင် အစအန များတို့ကို Hydro pulper တွင် ရေဖြင့် ပြန်လည်ဖျော်ပြီး လုပ်ငန်းတွင် ပြန်လည်အသုံး ပြုခြင်း။
-စားဖိုဆောင်မှအစိုင်အခဲစွန့်ပစ်ပစ္စည်းများ	-ဝန်ထမ်း စားဖိုဆောင်မှ အစိုင်အခဲ စွန့်ပစ် ပစ္စည်း များကို စနစ်တကျ စုယူပြီး စည်ပင် သာယာရေး ကော်မတီ ခွင့်ပြု သည့် နေရာ တွင် စွန့်ပစ်ခြင်း။
-စက်ပြင်ရုံမှစွန့်ပစ်ပစ္စည်းများ	-စနစ်တကျ စုဆောင်း၍ ထုခွဲ ရောင်းချခြင်း၊ မရပါက စက်မှုရန် ကော်မတီနှင့် စည်ပင်သာ ယာရေး ကော်မတီ ခွင့်ပြု သည့် နေရာတွင် စွန့်ပစ်ခြင်း။

**၁-၇-ဃ-(၄)။ ဆူညံသံ၊ တုန်ခါမှု များကြောင့် ထိခိုက်မှုများကို လျော့နည်းစေသော နည်းလမ်းများ**

သက်ရောက်မှုနည်းလမ်းများ	လျော့ချစေရန်ဆောင်ရွက်ချက်
-သယ်ယူပို့ဆောင်ရေးယာဉ်များ	-ယာဉ်ကြိုခိုင်မှု၊ အင်ဂျင်စွမ်းရည် အောက်ပိုင်း ကြိုခိုင်မှု၊ အိပ်ထေပိုက်များ ကောင်းမွန်စေခြင်း၊ ဝန်ထမ်းများနား နေချိန်နှင့် ရှောင်လွှဲ ဆောင်ရွက် ခြင်း။
-စက်ပစ္စည်းကိရိယာမောင်းနှင်မှုများ	-စက်ပစ္စည်းအလိုင်းမင့်၊ စက်ပတ်ကြိုးများ မလျော့ မတင်းရှိမှု၊ ဖောင်ဒေးရှင်းဘို့များ ချောင်နေမှု များကို ပြုပြင်ခြင်း။
-အကာအကွယ်ပစ္စည်းများအသုံးပြုခြင်း	-ဝန်ထမ်းများအတွက် နားအကာ၊ ဦးထုပ်၊ ဖိနပ် အကာ၊ အကာအကွယ် ပစ္စည်းများ ဝတ်ဆင် စေခြင်း နှင့် ဆူညံသည့် နေရာတွင် ဝန်ထမ်း တစ်ဦးကို တဆက် တည်း ကြာရှည်စွာ တာဝန် မပေးခြင်း။



၁-၇-င။ လျော့နည်းစေရန်ဆောင်ရွက်ချက်များနှင့်ထိခိုက်မှုအခြေအနေဆောင်ရွက်ခြင်း  
ဤစာပိုဒ်တွင် အပိုင်းသုံးပိုင်းအဖြစ်အောက်ပါအတိုင်းတင်ပြထားပါသည်။

- ထိခိုက်မှုများ၏ သဘောသဘာဝ
- ထိခိုက်မှုများကိုဆန်းစစ်သည့်နည်းပညာ
- လျော့နည်းအောင်ဆောင်ရွက်ခြင်းများနှင့် ထိခိုက်မှုဆန်းစစ်ခြင်း

#### ထိခိုက်မှုများ၏သဘောသဘာဝ

Nilar Pulp and Paper Co., Ltd. (URSP-Mill) ၏ ပတ်ဝန်းကျင် အခြေအနေကို လေထု၊ မြေထု၊ ရေထု၊ဆူညံသံများနှင့် အနံ့အသက်များ အပေါ် သက်ရောက်မှုများဖြင့် တင်ပြ ထားပါသည်။ သက်မှုများသည် ကောင်းကျိုးဖြစ်ပေါ်မှုနှင့် ဆိုးကျိုးဖြစ်ပေါ်မှု နှစ်မျိုးဖြစ်ပါသည်။

#### ထိခိုက်မှုဆန်းစစ်သည့်နည်းပညာ

ထိခိုက်မှုဆန်းစစ်သည့်နည်းပညာကို PLOMP (2004) Matrix ကိုအသုံးပြုထားပြီး အရေးပါမှု၊ အချိန်ကာလ၊ နေရာဒေသ၊ ပမာဏနှင့် ဖြစ်တန်ချေတို့ ပါဝင်ကြပါသည်။

အသုံးပြုသည့်ပုံသေနည်းမှာ

$$\text{အရေးပါမှု} = (\text{အချိန်ကာလ} + \text{နေရာဒေသ} + \text{ပမာဏ}) \times \text{ဖြစ်တန်ချေ}$$

ဖြစ်ပါသည်။

#### လျော့နည်းအောင်ဆောင်ရွက်ခြင်းနှင့်ထိခိုက်မှုဆန်းစစ်ခြင်း

ဤစာပိုဒ်ခွဲငယ်တွင် အထက်ပါ ပုံသေနည်းကို အသုံးပြု၍ ရေးပါမှုကို လျော့နည်းစေရန် ဆောင်ရွက်မှု မဆောင်ရွက်မီနှင့် ဆောင်ရွက်ပြီးအခြေအနေများကို လေထု၊ ရေထု၊ မြေထု ဆူညံသံနှင့် အနံ့အသက်များ အပေါ် တွက်ချက်တင်ပြ ထားပါသည်။

၁-၇-စ။ ပတ်ဝန်းကျင်လေထု၊ ရေထုနှင့် ဆူညံသံများ အတွက် မျိုးသား ပတ်ဝန်း ကျင်ဆိုင်ရာ အရည်အသွေး ထုတ်လွှတ်မှုလမ်းညွှန်ချက်များ

#### ၁-၇-စ-(၁)။ လေထုအတွင်းသို့ထုတ်လွှတ်မှု

ယေဘုယျ ညစ်ညမ်း ပစ္စည်းများနှင့် လောင်ကျွမ်းမှု ဆိုင်ရာ ထုတ်လွှတ် အစိုးအငွေ့ စံချိန်စံနှုန်း များကို အပိုဒ်(၆-၅-၁) တွင်ဖော်ပြထား ပါသည်။



**၁-၇-စ-(၂)။ ဆူညံသံ**

စက်မှုဇုန်များ၊ လူနေအိမ်များတွင် သတ်မှတ်ထားသည့် ဆူညံသံ တန်ဖိုးများ ကို အပိုဒ်(၆-၅-၂) တွင် တင်ပြထား ပါသည်။

**၁-၇-စ-(၃)။ စွန့်ပစ်ရည်စန့်နန်းသတ်မှတ်ချက်များ**

အရောင်ချွတ် မထားသော Kraft ပျော့ဖတ် အတွက် ထုတ်လွှတ်မှု စံချိန်စံနှုန်း သတ်မှတ်ချက်ကို အပိုဒ်(၆-၅-၃)တွင် တင်ပြထားပါသည်။

**၁-၇-ဆ။ ၂၀၁၈ခုနှစ် ဒီဇင်ဘာလက ရေးသားခဲ့သည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် အပေါ် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာန၏ အကြံပြုချက်များကိုလိုက်နာ ဆောင်ရွက်ခြင်း**

**လုပ်ငန်းခွင် လေဝင်လေထွက် ကောင်းမွန် ရန်နှင့် အလင်းရောင် လုံလောက်စွာ ရရှိစေရန် ဆောင်ရွက် ထားရှိမှုအား ဖော်ပြရန်**

အမှုန်အမွှား အများဆုံး ထွက်ရှိသည့် ကောက်ရိုး ပြုပြင်ဌာနတွင် သဘာဝ လေဝင် လေ ထွက် ကောင်းစေရန် စက်ရုံ ခေါင်းမိုးတွင် Canopy များ တပ်ဆင် ထားခြင်း၊ နံရံ အပေါ်ပိုင်း တွင် အပေါက်များ ဖောက်ထားခြင်း၊ တံခါးမကြီး များကို ကျယ်ကျယ် ဖွင့်နိုင်ရန်၊ စီစဉ်ထားပုံကို အပိုဒ် (၆-၆) တွင် တင်ပြ ထားပါသည်။

**ထိခိုက်မှုများကိုလျော့နည်းစေရန် ဆောင်ရွက်ခြင်းများကြောင့် လျော့နည်းမှု ရလဒ်များကို ဖော်ပြရန်**

ယခု EMPအစီရင်ခံစာတွင် ပတ်ဝန်းကျင်လေ၊ လုပ်ငန်းခွင်လေ၊ မြေကြီး၊ မြေပေါ်ရေ၊ မြေအောက်ရေ နှင့် စွန့်ပစ်ရည်များကို အခြေခံ အချက်အလက်များ အနေဖြင့် တိုင်းတာထားပြီး ဖြစ်ပါသည်။ ယင်း အချက်အလက်များကို နောင်နှစ်များတွင် တိုင်းတာမည့် အကြိမ်၊ နေရာ၊ ရန်ပုံ ငွေများကို ရေးဆွဲထား ပါသည်။EMP ပြင်ဆင်နေဆဲ ကာလဖြစ်ပြီး ဆက်လက် လုပ်ကိုင်သွား ရမည် ဖြစ်ပါသည်။ ကြိုတင်မှန်းဆမှု အနေဖြင့် PLOMP (2004) Matrix ဖြင့် ခန့်မှန်း တင်ပြထား ပါသည်။

**၁-၈။ ဘေးအန္တရာယ်ဖြစ်နိုင်ချေဆန်းစစ်ခြင်း**

ဘေးအန္တရာယ်ဆန်းစစ်ခြင်းကို-

**၁-၈-က။**ရာသီဥတုပြောင်းလဲမှုအပါအဝင်အခြားဖြစ်ပေါ်နိုင်သောသဘာဝဘေးအန္တရာယ်များ ဆန်းစစ်ခြင်း

**၁-၈-ခ။ Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ မှဖြစ် ပေါ်လာနိုင်သော ဘေးအန္တရာယ် ဖြစ်နိုင်ခြေ ဆန်းစစ်ခြင်း-** ဟူ၍တင်ပြထားပါသည်။



**၁-၈-က။ ရာသီဥတုပြောင်းလဲမှုအပါအဝင်အခြားဖြစ်ပေါ်နိုင်သော သဘာဝဘေးအန္တရာယ်များ ဆန်းစစ်ခြင်း**

**ရာသီဥတုပြောင်းလဲမှုအပါအဝင်ဖြစ်ပေါ်လာနိုင်သောဘေးအန္တရာယ်များဆန်းစစ်ခြင်း**

အဖြစ် မြန်မာနိုင်ငံတွင်ဖြစ်ပေါ်ခဲ့သည့် ငလျင်၊ ဆူနာမီ၊ ရေလွှမ်းမိုးခြင်း၊ မြေပြိုခြင်း၊ လေမုန်တိုင်း တိုက်ခြင်း၊ တောမီးလောင်ခြင်းများတို့ကို ၁၉၉၀ခုနှစ်မှ ၂၀၁၄ခုနှစ်အတွင်း ဖြစ်ပွားမှုအကြိမ်၊ လူ အသေအပျောက်၊ ထိခိုက်မှု လူဦးရေ၊ ပျက်စီး ဆုံးရှုံးမှု များကို တင်ပြ ထားပါသည်။ ရာသီဥတု ပြောင်းလဲခြင်း အတွက် မိုးရာသီ တိုတောင်းခြင်း၊ ပင်လယ် ရေမျက်နှာပြင် အပူချိန် မြင့်တက်ခြင်း၊ မိုးခေါင်ခြင်း၊ အပူချိန် ညွှန်းကိန်းများ တိုးတက်ခြင်း၊ နေသာရက်များ တိုးလာခြင်း၊ ရေကြီးရန် အခွင့် အလမ်း တိုးလာခြင်း၊ လေမုန်တိုင်းနှင့် လေပြင်း တိုက်ခတ်မှု တိုးလာခြင်း၊ လှိုင်းကြီးခြင်း၊ ပင်လယ် ရေမျက် နှာပြင် မြင့်တက်ကြောင်း တို့ကို ဖော်ပြ ထားပါသည်။

**၁-၈-ခ။ Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ မှဖြစ်ပေါ်လာနိုင်သော ဘေးအန္တရာယ် ဖြစ်နိုင်ခြေဆန်းစစ်ခြင်း**

အဆိုပါ စက်ရုံ၏ ထုတ်လုပ်မှု၊ ဖြန့်ဖြူးမှု များကြောင့် ပတ်ဝန်းကျင် အပေါ် သက်ရောက် မှုများ၊ ဘေးအန္တရာယ်ရှိမှု၊ နယ်ပယ်၊ အချိန်နှင့် ကုစားမှု နည်းလမ်းများ တို့ကို အောက်ပါ ခေါင်းစဉ် အလိုက် တင်ပြ ထားပါသည်။

၁-၈-ခ-(၁)။ လေထုအပေါ်ဘေးအန္တရာယ်သက်ရောက်မှုများ

၁-၈-ခ-(၂)။ ရေထုအပေါ်ဘေးအန္တရာယ်သက်ရောက်မှုများ

၁-၈-ခ-(၃)။ မြေထုအပေါ်ဘေးအန္တရာယ်သက်ရောက်မှုများ

၁-၈-ခ-(၄)။ ဆူညံသံများကြောင့်ဘေးအန္တရာယ်သက်ရောက်မှုများ

၁-၈-ခ-(၅)။ အရိုးအငွေ့အနံ့အသက်များကြောင့် ဘေးအန္တရာယ် သက်ရောက်မှုများ

**၁-၈-ခ-(၁)။ လေထုအပေါ်ဘေးအန္တရာယ်သက်ရောက်မှုများ**

Nilar Pulp and Paper Co., Ltd. (URSP Mill)	
သက်ရောက်မှု	အမှုန်အမွှာများ၊ လောင်ကျွမ်း ဓာတ်ငွေ့များ၊ ဓာတ်ငွေ့ ယိုစိမ့်မှုများ၊ အနံ့ဆိုးများ ပျံ့နှံ့ခြင်း
ဘေးအန္တရာယ်ဖြစ်နိုင်မှု	-အမှုန်အမွှာများ၊ လေနှင့် မီးပွင့် မီးပွားတို့ အချိုး တစ်ခုတွင် မီးလောင် ပေါက် ကွဲနိုင်ပါသည်။ -မျက်စေ့၊ အသက်ရှူလမ်း ကြောင်းတို့တွင် မအီမသာ ဖြစ်စေနိုင်ပါသည်။ အချို့ဓာတ်ငွေ့များသည် ကင်ဆာဖြစ်ရန် အလားအလာ ရှိပါသည်။
သက်ရောက်မှုအရင်းအမြစ်	-မော်တော် ယာဉ်များ၊ လျှပ်စစ် ထုတ်စက်များ၊ အိမ်ဧကပိုက်မှ ဓာတ်ငွေ့ များ၊ -ဓာတ်ငွေ့ယိုစိမ့်ခြင်း (ထရန်စဖော်မာ၊ လေအေးစက်များ) -ကောက်ရိုးအမှုန်များ (ကောက်ရိုးပြုပြင်ခြင်းဌာန)



	<ul style="list-style-type: none"> <li>-ကော့စတစ်ရည်ဖျော်ရာမှ ကော့စတစ်အနံ့များ</li> <li>-လောင်စာဆီ အရည်အသွေး မပြည့်မီမှုကြောင့် ကာဗွန်ဒိုင် အောက်ဆိုဒ် ဓာတ်ငွေ့များ ထွက်ရှိခြင်း၊</li> <li>-ဘွိုင်လာမှ လောင်ကျွမ်း ဓာတ်ငွေ့များ၊</li> <li>-စပါးခွံ၊ လွှစာပြာလွင့်စင်မှုများ</li> </ul>
သက်ရောက်မှုနယ်ပယ်	-ကုန်ကြမ်း၊ ကုန်ချော သယ်ယူရာလမ်းတလျှောက်ရှိ ပြည်သူလူထု စက်ရုံ ဝန်ထမ်းများ။
သက်ရောက်မှုပမာဏနှင့်အချိန်	<ul style="list-style-type: none"> <li>- ပြည်သူလူထုအပေါ် ပမာဏနှင့် အချိန်နည်းပါသည်။</li> <li>-စက်ရုံဝန်ထမ်းများ အပေါ် အလယ်အလတ်ရှိ ပါသည်။</li> </ul>
ကုစားမှုနည်းလမ်းများ	<ul style="list-style-type: none"> <li>-အင်ဂျင်စွမ်းအင်မြင့်မားစေခြင်း</li> <li>-ပုံမှန်ပြုပြင်မွမ်းမံမှုဆောင်ရွက်ခြင်း</li> <li>-ထရန်စဖော်မာကို ကျွမ်းကျင်သူများနှင့် စစ်ဆေးခြင်း</li> <li>-ကောက်ရိုးပြုပြင်ဌာနတွင်လေဟာ အမှုန်ဖမ်းစက်စွမ်းရည် ပြည့်ဝစေခြင်း၊ ဖြစ်နိုင်ပါက electrostatic precipitation တပ်ဆင်ထားခြင်း</li> <li>-ကော့စတစ်ဖျော်ရာတွင် အချိန်ယူ ဆောင်ရွက်ခြင်း</li> <li>-ဘွိုင်လာတွင်လောင်စာဆီများ ပြီးပြည့်စုံစွာလောင်ကျွမ်းစေခြင်း၊</li> <li>-ဆိုင်ကလုံး၊ ရေဖြန်းအမှုန်ဖမ်းစက်များ၊ စွမ်းရည်ပြည့်ဝ စေခြင်း၊</li> <li>-စပါးခွံ/ လွှစာပြာများ စနစ်တကျ စွန့်ပစ်ခြင်း။</li> </ul>

**၁-၈-၁-(၂)။ ရေထုအပေါ်ဘေးအန္တရာယ်သက်ရောက်မှုများ**

<b>Nilar Pulp and Paper Co., Ltd. (URSP Mill)</b>	
သက်ရောက်မှု	<ul style="list-style-type: none"> <li>-ဝန်ထမ်းများ အသုံးပြုရာမှ စနစ်တကျမစွန့်ပစ်သည့် စွန့်ပစ်ရည်များ၊</li> <li>-စက်ဆီချောဆီ၊ ဘက်ထရီအက်ဆစ်၊ ထရန်စဖော်မာဆီ ဖိတ်စင်မှုများ၊</li> <li>-စက်ပစ္စည်း၊ တိုင်ကီ၊ ကောက်ရိုး၊ ပျော့ဖတ်ဆေးရည်များ၊</li> <li>-ဘွိုင်ဘလိုဒေါင်းရေများ၊</li> <li>-ရေသန့်ဌာနမှ ဆေးကြောရေများနှင့် reject ရေများ၊</li> <li>-ဝန်ထမ်းဆောင်မှုစွန့်ပစ်ရည်များ၊</li> <li>-စွန့်ပစ်ရည်သန့်စင်ဌာန၏စွန့်ပစ်ရည်များ၊</li> </ul>
ဘေးအန္တရာယ်ဖြစ်နိုင်မှု	<ul style="list-style-type: none"> <li>-BOD,COD,TSS မြင့်မားသော စွန့်ပစ်ရည်များသည် ဂေဟစနစ်ကို ထိခိုက်စေနိုင်ပါသည်။</li> <li>-ဘက်ထရီအက်ဆစ်များသည် မြေ၊ ရေတို့၏ ချဉ်ဖန်ကိန်းကို ပြောင်းလဲစေနိုင်ပါသည်။</li> <li>-စက်ဆီချောဆီ တို့သည် မြေနှင့်ရေ အတွင်းပိုင်း သို့ အလင်းရောင်နှင့် လေဝင်ရောက်မှု တားဆီးပါသည်။</li> <li>-ထရန်စဖော်မာဆီသည် ကင်ဆာဖြစ်ရန် အလားအလာရှိပါသည်။</li> </ul>





သက်ရောက်မှုအရင်းအမြစ်	-စနစ်မကျခြင်း၊ စည်းကမ်းမလိုက်နာခြင်း၊ တားမြစ်ချက်များချိုးဖျက်ခြင်း၊ ပိုက်လိုင်းယိုစိမ့်မှုများဖြစ်ခြင်း။
သက်ရောက်မှုနယ်ပယ်	-စွန့်ပစ်ရည်စွန့်ပစ်ရာလမ်းတလျှောက်နှင့် စက်မှုဇုန်မြောင်းတလျှောက်
သက်ရောက်မှုပမာဏနှင့်အချိန်	-စက်ရုံဧရိယာအတွင်းတွင် ပမာဏနှင့် အချိန် အတော်အတင့်ရှိပြီး ဝန်ထမ်း နှင့် စက်ရုံတွင်းတွင် နည်းပါသည်။
ကုစားမှုနည်းလမ်းများ	-စည်းကမ်းလိုက်နာခြင်း၊ -ဘွိုင်လာဘာလိုးဒေါင်းရေကို လိုအပ်သည်ထက်ပို မသုံးခြင်း၊ -ရေသန့်စင်မှုစနစ် လိုအပ်သလောက်သာ သန့်စင်ခြင်း၊ -စွန့်ပစ်ရည်များကို NEQ(E)G လမ်းညွှန်းချက် အတွင်း ရောက်ရန်ဆောင်ရွက်ခြင်း၊ -စားဖိုဆောင်၊ အဆောင်တို့တွင် ပညာပေး စည်းရုံးခြင်း။

**၁-၈-၁-(၃)။ မြေထုအပေါ်ဘေးအန္တရာယ်သက်ရောက်မှုများ**

Nilar Pulp and Paper Co., Ltd. (URSP Mill)	
သက်ရောက်မှု	-ဝန်ထမ်းများအသုံးပြုရာမှ ထွက်ရှိသော စွန့်ပစ်ပစ္စည်း များ၊ -ရုံးသုံးပစ္စည်းအပျက်အဆီများ၊ -လုပ်ငန်းစဉ်မှထုတ်လုပ်စဉ် ထွက်ရှိသည့် စွန့်ပစ်ပစ္စည်း များ၊ -ကောက်ရိုး၊ ပျော့ဖတ် အမှုန်အမွှားများ၊ အပိုင်းအစများ၊ -ဘွိုင်လာပြာများ(မီးခိုးခေါင်တိုင်) -ဘွိုင်လာပြာများ(မီးခြမ်းပြာများ) -ဝန်ထမ်း စားဖိုဆောင်၊ စားသောက်ခန်းမှ စွန့်ပစ်ပစ္စည်း အစိုင်အခဲများ၊
ဘေးအန္တရာယ်ဖြစ်နိုင်မှု	-မြေ၏ပါဝင်မှု ပြောင်းလဲခြင်း။ -ရေစီးသွားရာပြောင်းလဲခြင်း။
သက်ရောက်မှုအရင်းအမြစ်	-စနစ်မကျခြင်း၊ စည်းကမ်းမလိုက်နာခြင်း။
သက်ရောက်မှုနယ်ပယ်	-စက်ရုံပတ်ဝန်းကျင်စွန့်ပစ်ပစ္စည်းစွန့်ပစ်သည့်နေရာ။
သက်ရောက်မှုပမာဏနှင့်အချိန်	-သက်ရောက်မှု ပမာဏနှင့် အချိန်နည်းပါသည်။
ကုစားမှုနည်းလမ်းများ	-ပညာပေးစည်းရုံးခြင်း၊ အရေးယူခြင်း၊ စည်ပင်သာယာနှင့် ဖန်တီးမှုတို့ ခွင့်ပြုသည့် နေရာတွင် စွန့်ပစ် ခြင်း။

**၁-၈-၁-(၄)။ ဆူညံသံများကြောင့်ဘေးအန္တရာယ်သက်ရောက်မှုများ**

Nilar Pulp and Paper Co., Ltd. (URSP Mill)	
သက်ရောက်မှု	-မော်တော်ယာဉ်၊ လျှပ်စစ်ထုတ်စက် မောင်းနှင်မှုများ၊ -ကောက်ရိတ်ထစ်ခြင်း၊ ချက်လုပ်ခြင်း၊ ပျော့ဖတ် စက္ကူပြုလုပ်ခြင်း၊ -စက်ပစ္စည်းများမောင်းနှင်မှုများ၊



	-ဘွိုင်လာ မောင်းနှင်မှုများ၊
ဘေးအန္တရာယ်ဖြစ်နိုင်မှု	-နားခံမရပ်နိုင်ဖြစ်ကာ အကြားအာရုံပျက်ဆီးခြင်း
သက်ရောက်မှုအရင်းအမြစ်	-စက်ပြုပြင်ထိန်းသိမ်းမှုညံ့ခြင်း -ကောက်ရိုးကျိုချက်အိုးသို့ ရေနွေးငွေ့အလျင်စလို လွှတ် ခြင်း။
သက်ရောက်မှုနယ်ပယ်	-ကုန်ကြမ်းကုန်ချောသယ်လမ်းတလျှောက် ပြည်သူလူထု -စက်ရုံဝန်ထမ်းနှင့် စက်ရုံဝန်းကျင် ပြည်သူလူထု
သက်ရောက်မှုပမာဏနှင့်အချိန်	-ကုန်ကြမ်းကုန်ချောသယ် လမ်းတလျှောက် ပြည်သူလူထု အပေါ် သက်ရောက်မှုပမာဏနှင့် အချိန်နည်း ပါသည်။ -ဝန်ထမ်းများအပေါ် အတော်အတင့်ရှိပါသည်။ -စက်ရုံဝန်းကျင် ပြည်သူလူထု အပေါ်သက်ရောက်မှု နည်း ပါသည်။ အချိန်အတော်အတန်ရှိပါသည်။
ကုစားမှုနည်းလမ်းများ	-မော်တော်ယာဉ်၊ လျှပ်စစ် ထုတ်စက်များ၊ စွမ်းရည် ပြည့်ဝ စေခြင်း၊ -စက်ပစ္စည်း များကို ပုံမှန် ပြုပြင် မွမ်းမံ မှုများ ဆောင်ရွက် ခြင်း၊ -လုပ်ငန်းသုံး အကာအကွယ် ပစ္စည်းများ တပ်ဆင်စေခြင်း၊ -ဆူညံသည့် နေရာတွင် ဝန်ထမ်း တစ်ဦးကို တဆက်တည်း ရေရှည် တာဝန်မပေးခြင်း။

**၁-၈-၁-(၅)။ အနီးအငွေ့အနံ့အသက်များကြောင့်ဘေးအန္တရာယ်သက်ရောက်မှုများ**

<b>Nilar Pulp and Paper Co., Ltd. (URSP Mill)</b>	
သက်ရောက်မှု	-မော်တော်ယာဉ်များ၊ လျှပ်စစ် ထုတ်စက် များ၏ အိပ်ဇော ပိုက်မှ ဓာတ်ငွေ့များ၊ -ကော့စတစ်ဆိုဒါအနံ့အသက်များ၊ -ကောက်ရိုး ကျိုချက်အိုးမှ ကော့စတစ်၊ Black liquor အနံ့များ၊ -ဘွိုင်လာခေါင်းတိုင်မှ အနံ့အသက်များ၊ -စားဖိုဆောင်မှအနံ့အသက်များ။
ဘေးအန္တရာယ်ဖြစ်နိုင်မှု	-နံ့ဆိုးများကြောင့်မအိပ်သာဖြစ်ခြင်း။
သက်ရောက်မှုအရင်းအမြစ်	-စက်များစွမ်းရည်ကျခြင်း၊ -ကော့စတစ်ဖျော်ရာတွင် အချိန်မယူခြင်း၊ -ကောက်ရိုး ကျိုချက်အိုး လုပ်ရာတွင် ထိန်းချုပ်မှု မရှိခြင်း၊ -ဘွိုင်လာတွင် လေနှင့်လောင်စာ အချိုး မကိုက်ခြင်း။
သက်ရောက်မှုနယ်ပယ်	-မော်တော်ယာဉ်လမ်းကြောင်းပေါ်ရှိ ပြည်သူလူထု၊ -စက်ရုံတွင်ဝန်ထမ်းများ။
သက်ရောက်မှုပမာဏနှင့်အချိန်	-ပြည်သူလူထုအပေါ် သက်ရောက်မှု ပမာဏနှင့် အချိန် နည်းပါသည်။
ကုစားမှုနည်းလမ်းများ	-စက်များစွမ်းရည်ပြည့်စေခြင်း၊



	-ကော့စတစ်ဖျော်ရာတွင်အချိန်ယူ ဆောင်ရွက်ခြင်း၊ -ကောက်ရိုးကျိုချက်အိုးကို ဖြေးညင်းစွာဖွင့်ခြင်း၊ -ဘွိုင်လာတွင် လေနှင့်လောင်စာ အချိုးမှန်စေခြင်း။
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**၁-၉။ အများပြည်သူသဘောထားရယူခြင်းနှင့် ဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ်**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံ အတွက် အများပြည်သူ သဘောထားရယူခြင်းနှင့် ဖွံ့ဖြိုးတိုးတက်ရေး အစီအစဉ် လုပ်ငန်းစဉ် များကို အောက်ပါ အတိုင်း(၆)ပိုင်း ခွဲ၍ ဆောင်ရွက်ခဲ့ပါသည်။

၁-၉-က။ စက်ရုံလုပ်သားဝန်ထမ်းများနှင့်တွေ့ဆုံ၍ဆန္ဒသဘောထားများရယူခြင်း

၁-၉-ခ။ စက်ရုံအနီးပတ်ဝန်းကျင်ရှိပြည်သူလူထုနှင့်တွေ့ဆုံ၍ဆန္ဒသဘောထားများရယူခြင်း

၁-၉-ဂ။ စက်ရုံလုပ်သားဝန်ထမ်းများနှင့် စက်ရုံအနီးပတ်ဝန်းကျင်ရှိ ပြည်သူလူထုတို့၏ အကြံပြုချက် ဆန္ဒသဘောထား အမြင် များကို စက်ရုံ မန်နေဂျာထံသို့ ပေးပို့၍ သတင်းပေးပို့ခြင်း

၁-၉-ဃ။ စက်ရုံမန်နေဂျာမှ အကြံပြုချက် ဆန္ဒသဘောထားအမြင်များနှင့် ပတ်သက်၍ စက်ရုံမှ ဆောင်ရွက်ပေးနိုင်သည့်အစီအစဉ်များကိုအကြောင်းပြန်ကြားခြင်း

၁-၉-င။ ဖွံ့ဖြိုးတိုးတက်ရေးအစီအစဉ်

၁-၉-စ။ CSRလုပ်ငန်းအစီအစဉ်နှင့်ရန်ပုံငွေလျာထားချက်

**၁-၉-က။ စက်ရုံလုပ်သားဝန်ထမ်းများနှင့်တွေ့ဆုံ၍ဆန္ဒသဘောထားများရယူခြင်း**

စက်ရုံ လုပ်သားဝန်ထမ်း များနှင့် တွေ့ဆုံ၍ ဆန္ဒသဘော ထားများ ရယူခြင်း အစီအစဉ်ကို စက်ရုံ အစည်းအဝေး ခန်းမတွင် ဖေဖော်ဝါရီလ (၅)ရက်နေ့၊ ၂၀၁၈ခုနှစ်တွင် ဆောင်ရွက်ခဲ့ပြီး ဝန်ထမ်း(၂၃)ဦး တက်ရောက် ခဲ့ပါသည်။ တက်ရောက် ဝန်ထမ်းများ၏ စာရင်းနှင့် အကြံပြုလွှာ(၂၂) စောင်တို့ကို ရရှိခဲ့ပါသည်။ ယင်း အကြံပြုလွှာ များ၏ အကျဉ်းချုပ် ဖော်ပြချက် ကို စာပိုဒ်(၈-၁) တွင်ဖော်ပြ ထားပြီး အသေးစိတ် ဖော်ပြချက် များကို နောက်ဆက်တွဲ ဖော်ပြချက် (၂)တွင် ဖော်ပြ ထားပါသည်။

**၁-၉-ခ။ စက်ရုံအနီးပတ်ဝန်းကျင်ရှိပြည်သူလူထုနှင့်တွေ့ဆုံ၍ဆန္ဒသဘောထားများရယူခြင်း**

စက်ရုံအနီး ပတ်ဝန်းကျင်ရှိ ပြည်သူ လူထုနှင့် တွေ့ဆုံ၍ ဆန္ဒသဘောထား ရယူခြင်း အစီအစဉ်ကို အမှတ်(၈၉)၊ ရပ်ကွက် အုပ်ချုပ် ရေးမှူးရုံး၊ ဒဂုံဆိပ်ကမ်း မြို့နယ်တွင် စက်တင်ဘာလ (၁)ရက်နေ့၊ ၂၀၁၈ခုနှစ်တွင် ဆောင်ရွက်ခဲ့ပြီး အကြံပြုလွှာ (၂၃)စောင် ရရှိခဲ့ပါသည်။ ယင်း အကြံပြုလွှာများ၏ အကျဉ်းချုပ် ဖော်ပြချက်ကို စာပိုဒ်(၈-၂)တွင် ဖော်ပြထားပြီး အသေးစိတ် ဖော်ပြချက် များကို နောက် ဆက်တွဲ ဖော်ပြချက် (၃)တွင် ဖော်ပြထား ပါသည်။



၁-၉-ဂ။ စက်ရုံလုပ်သားဝန်ထမ်းများနှင့် စက်ရုံအနီးပတ်ဝန်းကျင်ရှိပြည်သူလူထုတို့၏အကြံပြုချက် ဆန္ဒသဘောထားအမြင်များကို စက်ရုံမန်နေဂျာထံသို့ပေးပို့၍သတင်းပေးပို့ခြင်း

စက်ရုံ လုပ်သား ဝန်ထမ်းများနှင့် စက်ရုံအနီး ပတ်ဝန်းကျင်ရှိ ပြည်သူ လူထု တို့၏ အကြံပြုချက် ဆန္ဒသဘောထား အမြင်များကို ဆောင်ရွက် ပေးရန် ယင်းတို့၏ ဆန္ဒသဘောထား များကို စုစည်းခြင်း၊ လေ့လာ ခြင်းနှင့် အကျဉ်းချုပ် ဖော်ပြချက် များကို စက်ရုံ မန်နေဂျာ ထံသို့ ပေးပို့ခြင်းများ ဆောင်ရွက် ခဲ့ပါသည်။ ယင်း ဆန္ဒသဘောထားများ အပါအဝင် Green Myanmar Environmental Services Co., Ltd.၏ ပေးစာကို စက်ရုံ မန်နေဂျာထံသို့ ပေးပို့ခဲ့ပါသည်။ ယင်း ပေးစာကို နောက်ဆက် တွဲဖော်ပြချက်(၄)တွင် ဖော်ပြ ထားပါသည်။

၁-၉-ဃ။ စက်ရုံမန်နေဂျာမှ အကြံပြုချက် ဆန္ဒသဘောထားအမြင်များနှင့် ပတ်သက်၍ စက်ရုံမှ ဆောင်ရွက်ပေးနိုင်သည့် အစီအစဉ်များကိုအကြောင်းပြန်ကြားခြင်း

စက်ရုံ မန်နေဂျာထံမှ အကြံပြုချက် ဆန္ဒသဘောထားအမြင်များနှင့် ပတ်သက်၍ စက်ရုံမှ ဆောင်ရွက်ပေးနိုင်သည့် အစီအစဉ်များကို အကြောင်းပြန်ကြားသည့် ပြန်စာကို လက်ခံ ရရှိခဲ့ ပါသည်။ ယင်းပြန်စာနှင့် အတူ စက်ရုံက ဆောင်ရွက်ပေးမည့် အစီအစဉ် များကို နောက်ဆက်တွဲ ဖော်ပြချက် (၅)တွင် ဖော်ပြထားပါသည်။

၁-၉-င။ ဖွံ့ဖြိုးတိုးတက်စေရေးအစီအစဉ်

အရင်က သုံးစွဲခဲ့သည့် အသုံးစရိတ်များ၊ ဝန်ထမ်းလုပ်သား များ၏ မွေးနေ့ပွဲအတွက် လှူဒါန်းခြင်း၊ ကတိန်သင်္ကန်း နှစ်စဉ်ကပ်လှူခြင်း၊ ချင်းပြည်နယ်၊ မင်းတပ်မြို့ရှိ မနတအုပ်စု ဘုန်းကြီး ကျောင်းအတွက် အလှူငွေများ လှူဒါန်းခြင်း၊ မြန်မာနိုင်ငံ စက္ကူနှင့် ပျောဖတ် အသင်းအတွက် အလှူ ငွေများ လှူဒါန်းခြင်း၊ လှူဒါန်းမှု အသေးစိတ် အချက်အလက်များ၊ လှူဒါန်းမှုများ အတွက် ဂုဏ်ပြု လက်မှတ်များ၊ လှူဒါန်းမှု ပုံရိပ်များကို စာပိုဒ်-၅တွင် ဖော်ပြထားပါသည်။ လူမှုစီးပွားရေး တာဝန်သိမှု အစီအစဉ်အတွက် ခန့်မှန်းငွေကြေး သုံးစွဲမှု အစီအစဉ်လည်း ရှိပြီး နောက်နောင်တွင် ဆောင်ရွက်ရန် အစီအစဉ်လည်း ရှိပါသည်။

၁-၉-စ။ CSRလုပ်ငန်းအစီအစဉ်နှင့်ရန်ပုံငွေလျာထားချက်

Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံအနေဖြင့် CSRလုပ်ငန်းများ အတွက် ယခင်နှစ် များကဲ့သို့ အလျဉ်းသင့်သလို ဆောင်ရွက်ရန်နှင့် နှစ်စဉ် အသားတင် အမြတ်ငွေ ၏ ၂%ကို သုံးစွဲရန် လျာထားကြောင်း တင်ပြ ထားပါသည်။

၁-၁၀။ စက်ရုံပိတ်သိမ်းခြင်းအစီအစဉ်

စက်ရုံပိတ်သိမ်းခြင်း အစီအစဉ်တွင် ရည်ရွယ်ချက်များ၊ စက်ရုံ ပိတ်သိမ်းမည့် အဖွဲ့အစည်းဖွဲ့စည်း ခြင်း၊ အဖွဲ့ဝင်များ၏ တာဝန်နှင့် ဝတ္တရားများ၊ ထိခိုက်မှု ဖြစ်ပေါ်နိုင်သည့် အရင်းအမြစ်များ၊ ထိခိုက်နိုင်

သည့်နေရာ၊ ထိခိုက်နိုင်သည့် ပမာဏနှင့် ကြာချိန်၊ နှင့် စက်ရုံ ပိတ်သိမ်းခြင်းကြောင့် ဖြစ်ပေါ်လာနိုင်သည့် ထိခိုက်မှု များကို လျော့ပါးစေရေး နည်းလမ်းများကို ဖော်ပြထားပြီး အသေးစိတ် အချက်အလက် များကို စာပိုဒ် (၉)တွင် ဖော်ပြထားပါသည်။

**၁-၁၀-က။ ရည်ရွယ်ချက်များ**

ပတ်ဝန်းကျင်ပေါ် သို့သက်ရောက်နိုင်သည့်ထိခိုက်မှုဆိုးကျိုးများကိုလျော့ချရန်နှင့် ကောင်းကျိုးများတိုးပွားစေရန်ရည်ရွယ်ပါသည်။

**၁-၁၀-ခ။ စက်ရုံပိတ်သိမ်းမည့်အဖွဲ့အစည်းဖွဲ့စည်းခြင်း**

စက်ရုံပိတ်သိမ်းမည့်အဖွဲ့အစည်းဖွဲ့စည်းခြင်းကို အောက်ပါတို့ဖြင့်ဆောင်ရွက်ပါသည်။

- ◆ အဖွဲ့ခေါင်းဆောင်
- ◆ ရုံးပိုင်းဆိုင်ရာကိုယ်စားလှယ်
- ◆ လျှပ်စစ်ပိုင်းဆိုင်ရာကိုယ်စားလှယ်
- ◆ စက်ပိုင်းဆိုင်ရာကိုယ်စားလှယ်
- ◆ ငွေစာရင်းဌာနဆိုင်ရာကိုယ်စားလှယ်
- ◆ လူမှု-စီးပွားရေးဆိုင်ရာကိုယ်စားလှယ်

**၁-၁၀-ဂ။ အဖွဲ့ဝင်များ၏တာဝန်နှင့်ဝတ္တရားများ**

အဖွဲ့ဝင်များ၏တာဝန်နှင့်ဝတ္တရားများအသေးစိတ်ကို စာပိုဒ်၉-၃တွင်ဖော်ပြထား ပါသည်။

**၁-၁၀-ဃ။ စက်ရုံ ပိတ်သိမ်းခြင်း အစီအစဉ်အတွက် ကုန်ကျစရိတ် ခန့်မှန်းခြင်းနှင့်လုပ်ငန်း အချိန်ဇယား**

ဤအခန်းတွင် စက်ရုံပိတ်သိမ်းခြင်း အတွက် ခန့်မှန်းကုန်ကျငွေ ၁၁၇,၈၅၀,၀၀၀ ကျပ်ငွေ ကိုခန့်မှန်း ထားပြီးအသေးစိတ် ဖော်ပြချက်ကို စာပိုဒ်(၉-၅)တွင် ဖော်ပြထားပြီး မလုံလောက်ပါက ထပ်မံပြည့်တင်း သုံးစွဲသည် ဖြစ်ကြောင်း ဖော်ပြထား ပါသည်။ ထို့ပြင် စက်ရုံ ပိတ်သိမ်းသည့် လုပ်ငန်းအချိန်ဇယားကိုလည်း အောက်ပါ အတိုင်းတင်ပြ ထားပါသည်။



Nilar Pulp and Paper Co., Ltd. (URSP-Mill)စက်ရုံပိတ်သိမ်းသည့်လုပ်ငန်းအချိန်ဇယား

စဉ်	လုပ်ငန်းစဉ်	ရက်စွဲပတ်																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
၁။	ပိတ်သိမ်းရန်အတွက်တာဝန်ချ ထားခြင်းနှင့် တာဝန်ယူရန် အဖွဲ့ များ ဖွဲ့စည်းခြင်း။																	
၂။	ကုန်ကြမ်းပစ္စည်းများ သယ်ယူ ပြောင်းရွှေ့ခြင်း။ (လက်ကျန် ကောက်ရိုး၊ စပါးခွံ၊ လွှစာမှုန့်၊ ကော့စတစ်ဆိုဒါ နှင့် ချည်နှောင် ထားသော နန်းကြိုး စသဖြင့်)																	
၃။	ရုံးလုပ်ငန်းသုံး စာရွက်စာတမ်း များ၊ ဓာတ်ခွဲခန်းသုံး ပစ္စည်းများ၊ စာဖိုဆောင် စသည်တို့ ပြောင်း ရွှေ့ခြင်း။																	
၄။	ကန်ထရိုက်တာများနှင့် စာချုပ် ချုပ်ခြင်း။																	
၅။	လျှပ်စစ်ဘေးအန္တရာယ်ကင်း စေရန်နည်းလမ်းစီစဉ် ဆောင်ရွက်ခြင်း။																	
၆။	လျှပ်စစ်ပစ္စည်း၊ လျှပ်စစ်ဓာတ် အားလှိုင်းများ၊ ထရန်စဖော်မာ ပြောင်းရွှေ့ခြင်း။																	
၇။	ပိုက်လိုင်းများ၊ စက်ပစ္စည်းများ တစစီ ဖြုတ်ဖျက် ဖယ်ရှားခြင်း။																	
၈။	အဆောက်အအုံများကို ဖြိုဖျက်ဆီးခြင်း၊ ဖယ်ရှားခြင်း။ (လုံခြုံရေးဂိတ်၊ ဘွိုင်လာနှင့် အဓိက အဆောက်အအုံ၊ အရန်လျှပ်စစ်ထုတ်စက် နှင့် ကွန်ထရိုလာ အဆောက်အအုံ နှစ်လုံး၊ ရေသန့်အဆောက်အအုံ၊ ထမင်းစားခန်း နှင့် စွန့်ပစ်ရည်သန့်စင် အဆောက်အအုံ)																	
၉။	ရေဖြန့်ဝေမှုစနစ်နှင့် သိုလှောင်ကန်၊ ပိုက်လိုင်းများ နှင့် မြေအောက် ပိုက်လိုင်းဖယ်ရှားခြင်း။																	
၁၀။	ကုန်တင်ယာဉ် ပိတ်ချိန်စက် ဖယ်ရှားခြင်း။																	
၁၁။	ဘွိုင်လာ ရွှေ့ပြောင်းခြင်း။																	
၁၂။	မိလ္လာကန်၊ အညစ်အကြေးများ စွန့်ပစ်ခြင်း။																	
၁၃။	အုတ်မြစ်များကို တူးခြင်းနှင့် ဖယ်ရှားခြင်း။																	



## **Environmental Management Plan-EMP** **Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

[illegible]

**၁-၁၁။ ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာအစီအစဉ်**

ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှုကို အဓိက အပိုင်းကြီး(၂)ခုဖြင့် တင်ပြ ထားပါသည်။

၁-၁၁-(က)။ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် ဆောင်ရွက်မည့် အဖွဲ့ အစည်းဆိုင်ရာ အစီအစဉ်

၁-၁၁-(ခ)။ Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ လိုက်နာဆောင်ရွက်မည့် ကတိကဝတ် များ ဖြစ်ပါသည်။

**၁-၁၁-(က)။ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် ဆောင်ရွက်မည့် အဖွဲ့ အစည်းဆိုင်ရာ အစီအစဉ်**

လေထု၊ ရေထု၊ မြေထု၊ ဆူညံသံနှင့် ဝန်ထမ်းများအတွက် လက်ရှိထိခိုက်မှုများ လျော့ချ နိုင်သည့် လုပ်ဆောင်ချက်များနှင့် ငွေကြေး လျာထားချက် ၄,၉၂၀,၀၀၀ MMK ကို ဖော်ပြ ထားပါသည်။

**ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာဆောင်ရွက်မည့်အဖွဲ့အစည်းဆိုင်ရာအစီအစဉ်များ**

- ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့ဖွဲ့စည်းခြင်း
- တာဝန်ဝတ္တရားများ
- လိုက်နာဆောင်ရွက်မှုစောင့်ကြပ်ကြည့်ရှုခြင်းနှင့်အစီရင်ခံခြင်း
- ဖြစ်ပေါ်နိုင်သောပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာထိခိုက်မှုများအကျဉ်းချုပ်
- လက်ရှိထိခိုက်မှုများအားလျော့ချခြင်းအတွက် ဆောင်ရွက်မည့်လုပ်ငန်းအစီအစဉ်
- အနာဂတ်တွင်ဖြစ်ပေါ်နိုင်သောထိခိုက်မှုများအား လျော့ချခြင်းအတွက်ဆောင်ရွက်မည့်အစီအစဉ်
- အရေးပေါ်အခြေအနေဖြစ်ပေါ်ပါက တုံ့ပြန်ဆောင်ရွက်မည့်အစီအစဉ်ကြိုတင်ဆောင် ရွက်ထားရှိမှုများလေ့ကျင့်သင်ကြားမှုအစီအစဉ်များ
- ပတ်ဝန်းကျင်အရည်အသွေးစောင့်ကြပ်ကြည့်ရှုတိုင်းတာမည့်Parameterများ၊နည်းလမ်း များ၊ အချိန်ဇယား၊ သတ်မှတ်နေရာ၊ အကြိမ်အရေအတွက်နှင့် အတည်ပြု မည့်နည်းလမ်း
- ဒေသခံပြည်သူချိတ်ဆက်ပါဝင်ရေးနှင့်ဒေသဖွံ့ဖြိုးရေး
- စွမ်းဆောင်ရည်ဖွံ့ဖြိုးရေးနှင့်သင်တန်းအစီအစဉ်များအကောင်အထည်ဖော်မည့်အချိန် ဇယား
- ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်ပါလုပ်ငန်းစဉ်အလိုက် အကောင်အထည်ဖော်တာဝန်ပေးမည့်ပုဂ္ဂိုလ်အဖွဲ့အစည်းနှင့် သုံးစွဲမည့်ခန့်မှန်းအသုံးစရိတ်
- ပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာစီမံခန့်ခွဲမှုအဖွဲ့ဖွဲ့စည်းခြင်း



ပတ်ဝန်းကျင်နှင့် လူမှုရေး ဆိုင်ရာ စီမံခန့်ခွဲမှု အဖွဲ့ဖွဲ့စည်းခြင်း အတွက် အောက်ပါ အတိုင်း ဖွဲ့စည်း ထားကြောင်း ဖော်ပြထားပါသည် -

စဉ်	အမည်	ရာထူး	လုပ်သက်	ပညာအရည်အချင်း	တာဝန်များ	မှတ်ချက်
၁။	ဦးတင်အောင်မိုး	စက်ရုံမှူး	၁၂	Basic High school	စက်ရုံမှူး (ပတ်ဝန်းကျင်နှင့် စီမံခန့်ခွဲမှု အဖွဲ့ ခေါင်းဆောင်)	
၂။	ဦးဇော်လတ်	ကုန်ထုတ်လုပ်မှု ခေါင်းဆောင်	၁၀	B.Sc (Chemistry)	ကုန်ထုတ်လုပ်မှု (ကိုယ်စားလှယ်)	
၃။	ဦးဇော်ထွေးနောင်	ရုံးပိုင်းဆိုင်ရာ ခေါင်းဆောင်	၇	B.A (Myanmar)	ရုံးပိုင်းဆိုင်ရာ (ကိုယ်စားလှယ်)	
၄။	ဒေါ်စိုးစိုးပိုင်	ငွေကြေးပိုင်းဆိုင်ရာ ခေါင်းဆောင်	၁	B.A (Economic)	ငွေကြေးပိုင်းဆိုင်ရာ (ကိုယ်စားလှယ်)	

■ **တာဝန်ဝတ္တရားများ**

အဖွဲ့ဝင်များကိုသတ်မှတ်ထားသည့်တာဝန်ဝတ္တရားများကိုဖော်ပြထားပါသည်။

■ **လိုက်နာဆောင်ရွက်မှုစောင့်ကြပ်ကြည့်ရှုခြင်းနှင့်အစီရင်ခံခြင်း**

ယင်းကဏ္ဍတွင် - လုပ်ငန်းခွင်အတွင်းစောင့်ကြပ်ကြည့်ရှုခြင်းနှင့်စစ်ဆေးခြင်း

- အသေးအဖွဲ့ ဖြစ်ရပ်များ၊ မတော်တဆ ကိစ္စရပ်များ အစီရင်ခံခြင်း

- လုပ်ဆောင်ချက် များကို ညွှန်းကိန်း များဖြင့် သတ်မှတ် တိုင်းတာခြင်းနှင့်ယင်းညွှန်းကိန်းများအတိုင်း အရေးယူဆောင် ရွက်ခြင်း တို့ကိုဖော်ပြထားပါသည်။

■ **ဖြစ်ပေါ်နိုင်သောပတ်ဝန်းကျင်နှင့်လူမှုရေးဆိုင်ရာထိခိုက်မှုများအကျဉ်းချုပ်**

ယင်းခေါင်းစဉ် အောက်တွင် လေထု၊ ရေထု၊ မြေထု၊ လုပ်သား ဝန်ထမ်းများ လူမှု ပတ်ဝန်းကျင် အပေါ် ဆိုးကျိုးတရားများ ဖြစ်ပေါ်နိုင်မှုကို ဖော်ပြ ထားပါသည်။

■ **လက်ရှိထိခိုက်မှုများအားလျှော့ချခြင်းအတွက် ဆောင်ရွက်မည့်လုပ်ငန်းအစီအစဉ်**

လေထု၊ ရေထု၊ မြေထု၊ ဆူညံသံနှင့် ဝန်ထမ်းများ တို့အတွက် လက်ရှိ ထိခိုက်မှု များကို လျှော့ချနိုင်သည့် လုပ်ဆောင်ချက်များနှင့် ငွေကြေးလျာထားချက် ၄,၉၂၀,၀၀၀ ကျပ်ကို ဖော်ပြထားပါသည်။

■ **အနာဂတ်တွင်ဖြစ်ပေါ်နိုင်သောထိခိုက်မှုများအား လျှော့ချခြင်းအတွက်ဆောင်ရွက်မည့် အစီအစဉ်**

ယင်း ကဏ္ဍ၌ ဘွိုင်းလာတွင် အသုံးပြုသော စပါးခွံ/လွှစာမှုန့် ဘွိုင်းလာ အစား အရည်လောင်စာ (သို့မဟုတ်) ဓာတ်ငွေ့လောင်စာ ပြောင်းလဲအသုံးပြုပါက ရရှိနိုင်မည့် အကျိုးကျေးဇူးများ ကိုလည်းကောင်း၊ ကောက်ရိုးဆေးရေများကို သီးခြားခွဲထုတ် သန့်စင်ပြီး ပြန်လည် အသုံးပြုခြင်း၊ လင်ဂနင်ကို အသုံးချနိုင်ရန် သုတေသန လုပ်ငန်းများလုပ်ခြင်း၊ အသံဆူညံမှုလျော့နည်းသည့် လျှပ်စစ် ထုတ်စက်များ အသုံးပြုခြင်းနှင့် ဝန်ထမ်းများအတွက် စက်ရုံ အနီးအနားတွင် အိမ်ယာများ ဆောက်လုပ်ပေးခြင်း တို့ကိုတင်ပြထားပါသည်။

- **အရေးပေါ်အခြေအနေဖြစ်ပေါ်ပါက တုံ့ပြန်ဆောင်ရွက်မည့်အစီအစဉ်၊ ကြိုတင်ဆောင် ရွက်ထားရှိမှုများလေ့ကျင့်သင်ကြားမှုအစီအစဉ်များ**  
 အရေးပေါ် အခြေအနေ ကြုံတွေ့ရပါက ဆုံးရှုံးမှု လျော့နည်း စေရန်နှင့် အချိန်တိုတို အတွင်းပြန်လည် ထူထောင်နိုင်ရန် ‘အရေးပေါ်အခြေအနေစီမံချက်’ ရေးဆွဲထား ကြောင်းနှင့် လေ့ကျင့်သင်တန်း အစီအစဉ်များကို တင်ပြထားပါသည်။

စဉ်	လအမည်	လေ့ကျင့်သင်တန်းပေး မည့်အစီအစဉ်	သင်တန်းပေးမည့် ဌာန	သင်တန်း ကြာချိန်	မှတ်ချက်
၁။	ဇန်နဝါရီလ	မီးဘေးအန္တရာယ်ကြိုတင်ကာ ကွယ်ခြင်းနှင့်မီးငြိမ်းသတ်ခြင်း	မီးသတ်ဦးစီးဌာန	၃ ရက်	သင့်လျော်သော ဝန်ထမ်းများကို စက်ရုံမန်နေဂျာ မှ ရွေးချယ်ပေးရန် ဖြစ်ပါသည်။
၂။	မေလ	သဘာဝဘေးအန္တရာယ်ကြုံ တွေ့ ရပါက ဆောင်ရန်၊ ရှောင်ရန်များ နှင့် လေ့ကျင့်ဖတ်တိုက်ခြင်း	မီးသတ်ဦးစီးဌာန	၃ ရက်	
၃။	စက်တင်ဘာလ	ရှေးဦးသူနာပြုစုခြင်း	ကျန်းမာရေးနှင့်အား ကစားဝန်ကြီးဌာန	၃ ရက်	

- **ပတ်ဝန်းကျင်အရည်အသွေးစောင့်ကြပ်ကြည့်ရှုတိုင်းတာမည့်Parameterများ၊ နည်းလမ်းများ၊ အချိန်ဇယား၊ သတ်မှတ်နေရာ၊ အကြိမ်အရေအတွက်နှင့် အတည်ပြုမည့် နည်းလမ်း**  
 Nilar Pulp and Paper Co., Ltd. (URSP Mill)စက်ရုံအတွက် ပတ်ဝန်းကျင်လေ၊ ရေ၊ မြေနှင့် ဆူညံသံများကို တိုင်းတာသည့်နည်းလမ်း၊ တိုင်းတာသည့်အကြိမ်၊ တိုင်းတာသည့် နေရာ၊ ဆန်းစစ်ပုံနည်းလမ်း များတို့ကို ဇယားများဖြင့် တင်ပြထား ပါသည်။
- **ဒေသခံပြည်သူချိတ်ဆက်ပါဝင်ရေးနှင့်ဒေသဖွံ့ဖြိုးရေး**  
 ပတ်ဝန်းကျင် အရည်အသွေး စောင့်ကြပ်ကြည့်ရှု တိုင်းတာရေးအဖွဲ့နှင့် ဒေသခံ ပြည်သူ များ ပါဝင်သော လုပ်ငန်း လမ်းညွှန်အဖွဲ့များကို အပိုဒ် (၁၀-၁-၁)နှင့် အပိုဒ် (၁၀-၂)တွင်

ဖွဲ့စည်းထားကြောင်းနှင့် ဒေသဖွံ့ဖြိုးရေး လုပ်ငန်းများကို နှစ်စဉ် အသားတင် အမြတ် ငွေ၏ ၂%ကိုအသုံးပြုမည် ဖြစ်ကြောင်း တင်ပြ ထားပါသည်။

▪ **စွမ်းဆောင်ရည်ဖွံ့ဖြိုးရေးနှင့်သစ်တန်းအစီအစဉ်များအကောင်အထည်ဖော်မည့်အချိန်**

**ဇယား**

ဝန်ထမ်းများအတွက် ကျွမ်းကျင်မှုနှင့် စွမ်းဆောင်ရည်ဖွံ့ဖြိုးတိုးတက်စေရန် သစ်တန်း အစီအစဉ် များကို အောက်ပါ ဇယားဖြင့် တင်ပြထားပါသည်။

စဉ်	သစ်တန်းအမည်	သစ်တန်းသား	သစ်တန်းဆရာ	ကြာချိန်	သစ်တန်းပေးမည့်လ
၁။	-ဓာတ်ခွဲခန်းကျွမ်းကျင်မှု	-ဓာတ်ခွဲခန်းလုပ်သားများ၊	-ဓာတ်ခွဲခန်းကျွမ်းကျင်သူ	၃ရက်	အောက်တိုဘာလ
၂။	-ပြုပြင်ထိန်းသိမ်းမှုကျွမ်းကျင်မှု	-ပြုပြင်ထိန်းသိမ်းမှုဌာန၊	-ပြုပြင်ထိန်းသိမ်းမှုကျွမ်းကျင်သူ	၃ရက်	ဇန်နဝါရီလ
၃။	-ကုန်ထုတ်လုပ်မှုကျွမ်းကျင်မှု	-ကုန်ထုတ်လုပ်မှုဌာန၊	-ကုန်ထုတ်လုပ်မှုကျွမ်းကျင်သူ	၃ရက်	ဧပြီလ

**ပတ်ဝန်းကျင် နှင့်လူမှုရေးဆိုင်ရာ အစီအစဉ် ဆောင်ရွက်ရန်သုံးစွဲငွေလျာထားချက်**

Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ပတ်ဝန်းကျင် နှင့်လူမှုရေးဆိုင်ရာ အစီအစဉ် ဆောင်ရွက်ရန်သုံးစွဲငွေလျာထားချက် (၁၁,၇၀၀,၀၀၀) MMKကို လျာထားကြောင်းနှင့် လုံလောက်မှုမရှိ ပါက ထပ်မံဖြည့်တင်း သုံးစွဲရန် တင်ပြထားပါသည်။

**၁-၁၁-(ခ)။ Nilar Pulp and Paper Co., Ltd. (URSP Mill) ၏ လိုက်နာဆောင်ရွက်မည့် ကတိကဝတ်များ**

**Nilar Pulp and Paper Co., Ltd. (URSP Mill) စက်ရုံအနေဖြင့်-**

- ဤပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်သည်တိကျခိုင်မာကြောင်းနှင့်မှန်ကန် ပါကြောင်း
- ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးနှင့် သစ်တောရေးရာ ဝန်ကြီးဌာန (သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန)၏ လုပ်ထုံး လုပ်နည်း အပါအဝင် သက်ဆိုင်ရာ ဥပဒေ များကို လိုက်နာ၍ ဤပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို ရေးဆွဲထားကြောင်းနှင့် ယင်းဥပဒေ လုပ်ထုံးလုပ်နည်း များကို တိကျစွာ လိုက်နာမည် ဖြစ်ပါကြောင်း
- ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ပါ ကတိကဝတ်များ၊ ပတ်ဝန်းကျင် ထိခိုက်မှု

လျော့ချရေး လုပ်ငန်းများနှင့် အစီအစဉ်များကို အပြည့်အဝ အစဉ်အမြဲ လိုက်နာသွားမည် ဖြစ်ကြောင်း ကတိဝန်ခံမှုပြုပါသည်။

- လုပ်ငန်းလည်ပတ်နေစဉ်အတည်ပြုပြီး - ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်ကို တိုးတက်လာသည့် နည်းပညာများအရ နောင်အခါတွင် ပြင်ဆင်ဖြည့်စွက်ရန် ညွှန်ကြားချက် ရရှိပါကပြင်ဆင် ပေးပါမည်ဖြစ်ကြောင်း ကတိဝန်ခံမှု ပြုပါသည်။
- စက်ရုံပိတ်သိမ်းချိန် ထိခိုက်မှု လျော့နည်းရန်၊ လက်ရှိထိခိုက်မှုများ လျော့နည်း ရန်နှင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေး စီမံခန့်ခွဲမှုတွင် ထိခိုက်မှုများ လျော့နည်းရန် ငွေကြေးလျာထားသည်များကို သုံးစွဲရာတွင် မလုံလောက် ပါက ထပ်မံဖြည့်စွက် သုံးစွဲပါမည်။
- နိုင်ငံတော်က ထုတ်ပြန်ထားသော မူဝါဒ၊ ဥပဒေ၊ နည်းဥပဒေများ၊ ရရှိထားသည့် ခွင့်ပြုမိန့် လက်မှတ်များ (ဥပမာ - ပုဂ္ဂလိကစက်မှု မှတ်ပုံတင်၊ လျှပ်စစ်ဓာတ်အား သုံးစွဲမှု၊ ဘွိုင်လာ အသုံးပြုခွင့် လက်မှတ်၊ ယစ်မျိုးလိုဏ်စင် စသဖြင့်) တွင်ပါဝင် သည့် စည်းကမ်းချက်များကို လိုက်နာပါမည့် အကြောင်း ဝန်ခံကတိ ပြုပါသည်။

### ၁-၁၂။ နိဂုံး

အဆိုပါစက်ရုံသည် ကောက်ရိုးကို ကုန်ကြမ်းပစ္စည်းအဖြစ် အသုံးပြု၍ ပျော့ဖတ်ထုတ်လုပ် သော စက်ရုံဖြစ်ပါသည်။ စက်ရုံ၏ ကုန်ထုတ်လုပ်မှု၊ ဖြန့်ဖြူးရောင်းချမှု လုပ်ငန်းများကြောင့် လေထု၊ ရေထု၊ မြေထုအပေါ် ထိခိုက်မှုများနှင့် ဆူညံသံကြောင့် ပတ်ဝန်းကျင်အပေါ် ထိခိုက်မှုများ ရှိနိုင်ပါသည်။ အမှုန်အမွှား ပါဝင်မှု  $PM_{10}$ ၊  $PM_{2.5}$ ၊ အသံဆူညံမှု အဆင့်၊ COD၊ BOD၊ TSSနှင့် pHတန်ဖိုးများ ကဲ့သို့ လေ၊ ရေနှင့် စွန့်ပစ်ရည်များ ၏ ဓာတ်ခွဲစမ်းသပ် တိုင်းတာမှု ရလဒ်များအရ အဆိုပါ Parameterများ၏ တန်ဖိုးများသည် NEQ(E)G guideline တန်ဖိုးများထက် များပြား နေကြောင်း တွေ့ရပါသည်။ ထို့ကြောင့် Nilar Pulp and Paper Co., Ltd. (URSP Mill) အနေဖြင့် အနာဂတ်တွင် ခေတ်မီ နည်းပညာနှင့် လိုအပ်ချက်များကို ပြည့်မီစေရန် ကြိုးပမ်းဆောင်ရွက်လျက်ရှိပါသည်။

## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

**Nilar Pulp and Paper Co., Ltd (URSP Mill)** is the factory which produces the pulp sheets by using the rice straw as a main raw material. The annual production capacity is about **1350** tons pulp sheets. The address of factory is No. 59, U Shwe Bin Street, Industrial Zone (1), Dagon Seikkan Township, Yangon Region and Myanmar. The factory was established at 2003 and all MACHINERIES were available in local as fabricating, purchasing some complicated items in good second hand condition and installed by local professionals.

The objectives of factory are:

- (a) To use the abundant rice straw, byproduct of agricultural sector as raw material;
- (b) To earn the foreign exchange currency;
- (c) To fulfill money for the government tax; and
- (d) To fulfill the local jobs opportunities.

Production procedures are the nice straws are chipped, screened, washed and digested with caustic soda solution and steam in digester at elevated temperature (pressure). By digestion, cellulose fibres are separated out from rice straws and they are separated in proper size (fibre length) and washed. After washing, they are formed sheet by pressing with hot rollers.

**URSP Mill** is situated in Dagon Seikkan Township and environmental facts for this township are described as follows.

#### **Education Sector**

The Nationalities youth Resource Development Degree colleague as high education,

Basic Education High School	3 Nos.
Basic Education Middle School	4 Nos.
Basic Education Premary School	11 Nos.
The Nusery School	1 No.
Monastery Education School	8 Nos.

#### **Economic Facts**

This township is situated in Yangon Region and two industrial zone and paddy and beams is developed. There are 75 industries and 28 industries in zone 1 and 2 and also 211 cottage industry enterprises.

#### **Cultural Facts**

There are no distinct pagodas, monasteries, the monuments and other



religion building on places in this township.

## 1.2 Salient Features of the Factory in brief

Name of Owner	Daw San Myint (Director)
Type of Possession	Company
National Registration Card Number	12/Pa Ba Ta (Citizen)020072
Investment	182.89 Million MMK
The Responsible Person for Environmental Management Plan	U Tin Aung Moe Factory Manager 09-977212013

Salient Features of the Factory in detail are described at Section 2-1.

## 1.3 Facts of third party organization prepared of EMP

Company Name	Green Myanmar Environmental Services Co., Ltd.
Company Address	No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City, Yangon Region, Myanmar.
Company Registration Number	No. 2744/2012-2013 (Former) Company Registration No. 110299931
Contact Phone No.	09897978296
E-mail Address	<a href="mailto:gmescompany@gmail.com">gmescompany@gmail.com</a> , <a href="mailto:info@gmes-mm.com">info@gmes-mm.com</a>

Facts of third party organization, preparation of EMP are described at Section 2.2.

## 1.4 Policies, Legal and Institutional Frameworks

In this section, there are four parts as

- 1.4.1 Policies, legal and the institutional frameworks of **Nilar Pulp and Paper Co., Ltd (URSP Mill)**, concerning the products
- 1.4.2 The laws suggested by Environmental Conservation Department to fulfil in additional upon the Environmental Management Plan Report prepared at December, 2018
- 1.4.3 Institutional frameworks of Myanmar Government concerning the relevant policies, the legislation and institutional frameworks, environmental quality guideline value standards
- 1.4.4 International Convention, Treaties and agreements by Myanmar Government

**1.4.1 Policies, Legal and Institutional Frameworks of Nilar Pulp and Paper Co., Ltd (URSP Mill) Concerning Environment and Manufacturing the Products**

- 1.4.1.1 Constitution of Republic of the Union of Myanmar (2008)
- 1.4.1.2 The Conservation of Water Resources and River Law
- 1.4.1.3 The Underground Water Act, 21<sup>st</sup> June, 1930 Dated [Burma Act IV]
- 1.4.1.4 Prevention of Hazard from Chemical and Related Substances Law (2013)
- 1.4.1.5 The Prevention of Hazard from Chemical and Related Substances Rules
- 1.4.1.6 Electricity Law
- 1.4.1.7 The Private Industrial Enterprise Law
- 1.4.1.8 The Export and Import Law
- 1.4.1.9 Factory Act, 1951
- 1.4.1.10 The Law Amended the Factory Act 1951
- 1.4.1.11 The Law Amending the Leaves and Holidays Act, 1951
- 1.4.1.12 Leave and Holiday Rules
- 1.4.1.13 Employment and Skill Development Law
- 1.4.1.14 Natural Disaster Management Law
- 1.4.1.15 The Law Relating to Assistance, Care and Treatment on Injured Emergency Patient
- 1.4.1.16 1972, Public Health Law
- 1.4.1.17 Prevention and Control of Communicable Diseases Law
- 1.4.1.18 Myanmar Fire Brigade Law
- 1.4.1.19 Motor Vehicle Law
- 1.4.1.20 The Expressways Law
- 1.4.1. 21 The Labor Organization Law
- 1.4.1.22 The Labor Organization Rules
- 1.4.1.23 The Workmen's Compensation Act, 1923 (Act No. VIII of 1923, 5<sup>th</sup> March, 1923)
- 1.4.1.24 The Law Amending the Workmen's Compensation Act, 1923

1.4.1.25 The Settlement of Labor Dispute Law

1.4.1.26 2016 The Payment of Wages Act

1.4.1.27 The Social Security Law, 2012

1.4.1.28 Patent Law

1.4.1.29 The City of Yangon Development Law

1.4.1.30 The Environmental Conservation Law

1.4.1.31 Environmental Conservation Rules

1.4.1.32 National Environmental Quality (Emission) Guidelines

1.4.1.33 Environmental Impact Assessment Procedure

1.4.1.34 The Boiler Law

1.4.1.35 The Explosives Act (India Act IV, 1884, 1st July, 1887)

1.4.1.36 The Explosive Substances Act (India Act VI, 1908)

**1.4.2 The laws suggested by Environmental Conservation Department to fulfil in additional upon the Environmental Management Plan Report prepared at December, 2018**

1.4.2.1 National Environmental Policy (2019)

1.4.2.2 Yangon City Development Committee (2018)

**1.4.3 Institutional Framework of Myanmar Government Concerning the Relevant Policies, the Legislations and Institutional Framework, Environmental Quality Guideline Value Standards**

The Myanmar, different ministries tackle individual environmental and social issues and related laws (80 Nos.) are listed in section 3.3.

**1.4.4 International Conventions, Treaties and Agreements by Myanmar Government**

Myanmar has signed a number of international treaties related to the environment (13 Nos.) are listed in section 3.4.



### **1.5 Description of the Project**

The relevant facts about (**URSP Mill**) are as follow:

#### **(a) Factory Background and objectives**

**URSP Mill** is factory produces the rice straw pulp sheets and exports to abroad and annual capacity is about 1350 tons.

The factory was established at 2003 and all machineries were available in local as fabricating, purchasing some complicated items in good second hand condition and installed by local professionals.

The objectives of factory are, using the abundant rice straw, byproduct of agricultural sector as raw material; earning the foreign exchange currency; fulfilling the government tax and local jobs opportunities.

#### **(b) Factory location and area**

The geographical coordinates of **URSP Mill** are N 16° 50' 08.386" E 096° 16' 50.632"; area is 2.2 area, industrial estate type and own land. There are informations about them as latitude, longitude, google map, UTM map and surrounding condition (building, works) in Section 4.1.

#### **(c) Implementation Schedule**

**Nilar Plup and Paper Co., Ltd. URSP Mill** was established at 2003, test run on 2009 and commercial production on 2010.

#### **(d) Factory building layout plan**

There are nine main buildings and the building layout plan is shown in figure 4.8 and type of building, dimensions are also described. The images of some buildings are shown in section 4.4.

**(e) Raw Materials requirements, Consumptions, available, storage condition**

Annual Basis

Sr. No.	Commodities	A/U	Quantity	Manufacturer	Purchase from	Storage Condition
1.	Rice Straw	ton	5670	Local	Farmer	<b>Warehouse</b> Rice straws are piled on concrete floor and shown as Figure 4-15
2.	Caustic Soda	ton	803	China	Chemical Store	Caustic soda is packed in plastic bag and bags are piled in concrete floor under warehouse shown as Figure 4-16
3.	Common Salt	kg	2160	Local	Bayint Naung Market	Salt in plastic bag and is stored under warehouse and water treatment plant and shown as Figure. 4-16-A
4.	Rice Husk/ Saw Dust	ton	2800	Local	Farmer and Saw Mill	Rice husks are pile on concrete floor in warehouse and saw dusts are in plastic bags and store warehouse shown as Figure 4-17-A and Figure 4-17-B
5.	Binding Wire	ton	5	Local	Bayint Naung Market	Binding wire in reel and stored at warehouse
6.	Diesel	gal	500	Imported	Gas Station	Diesel is stored in 50 gallon steel drum and shown as figure 4-17-C
7.	Lubricant	gal	200	Imported	Bayint Naung Market	Lubricant is stored in 50 gallon steel drum and shown as figure 4-17-D
8.	Hydraulic Oil	gal	100	Imported	Bayint Naung Market	Hydraulic oil is stored in 50 gallon steel drum

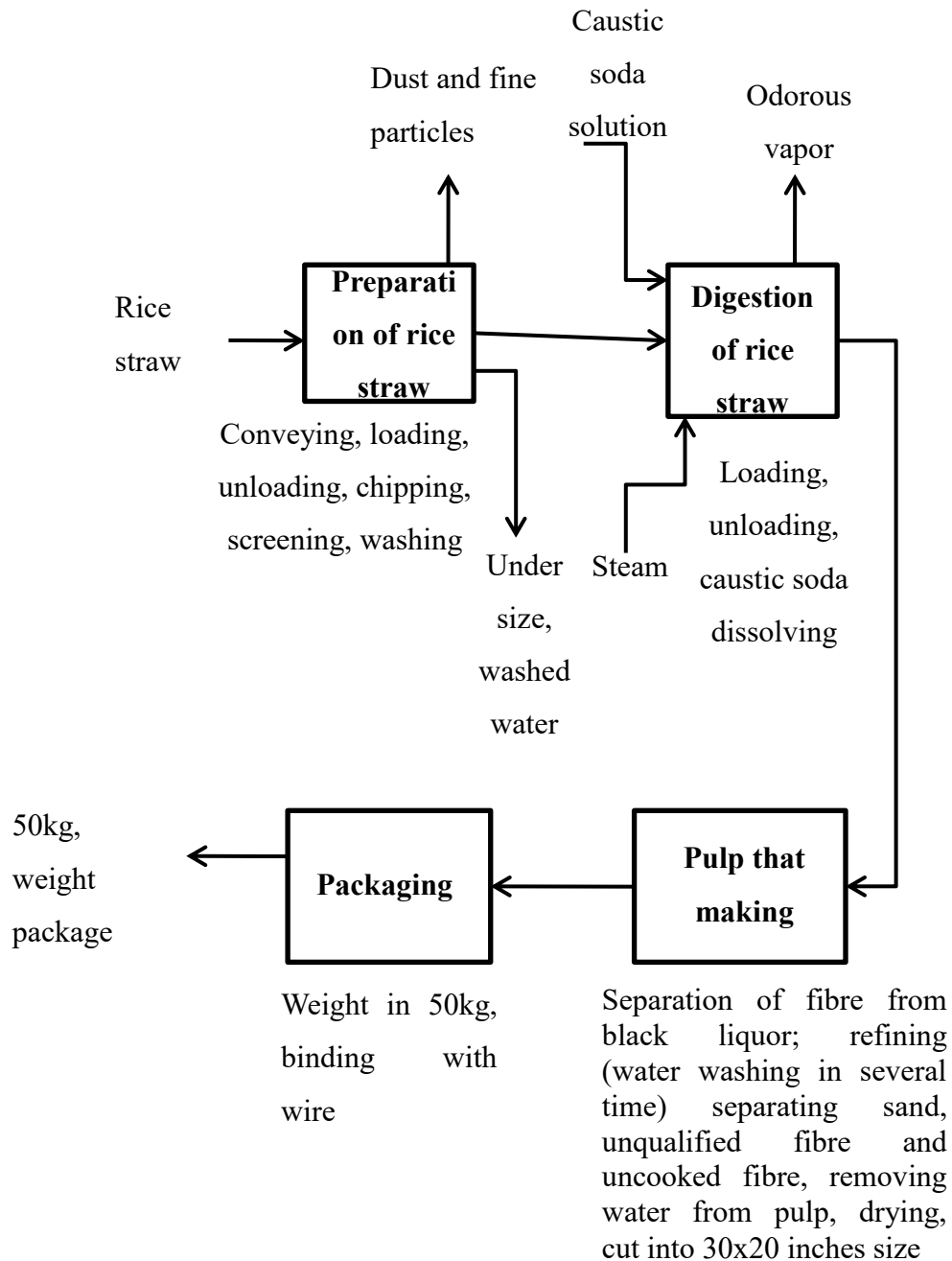


**(f) Production Procedure**

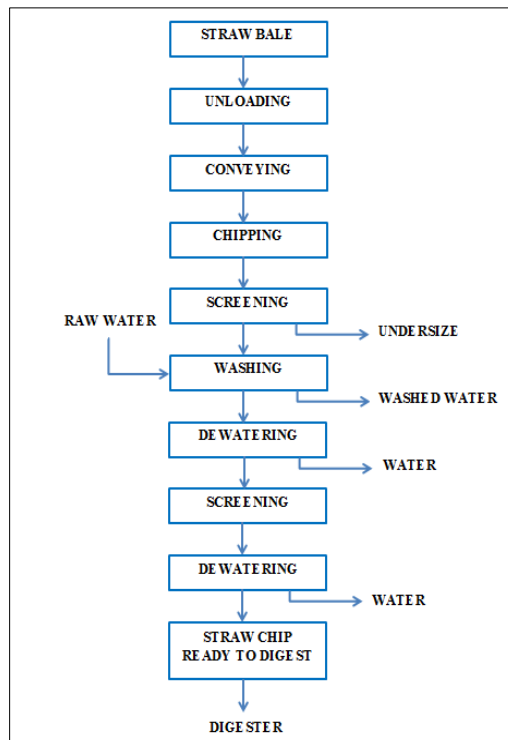
Production procedure can be divided as three parts in following.

- Preparation of rice straw
- Digestion of rice straw (Production of refined pulp fibre from rice straw)
- Pulp sheet making and packaging

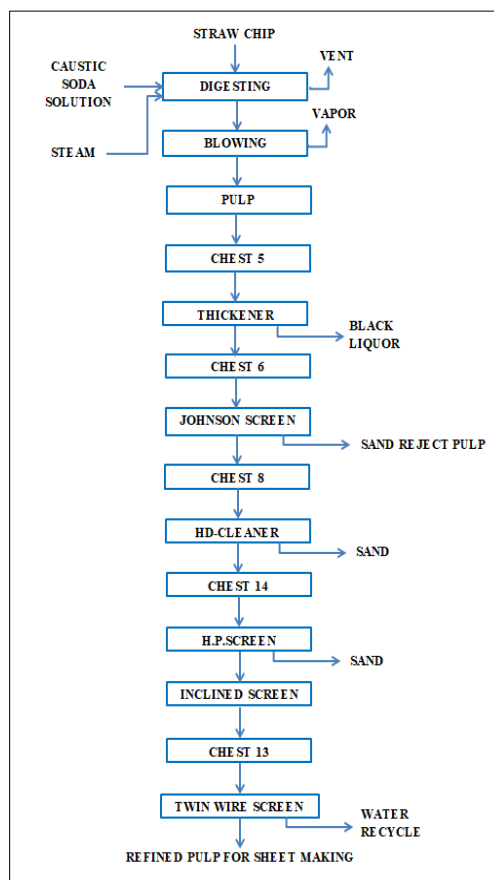
The overall procedure in brief is,



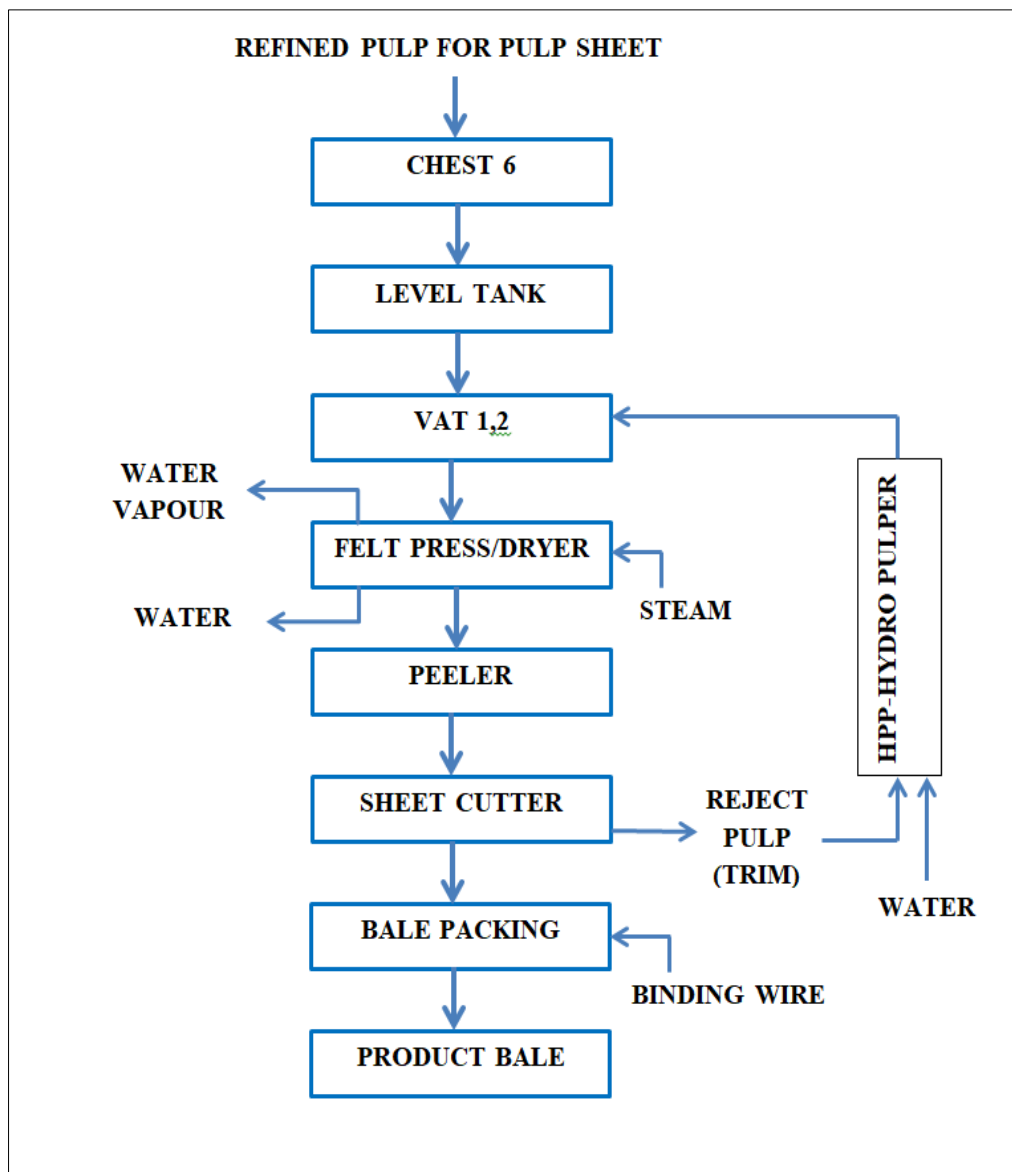
(g) Preparation of rice straw



(h) Digestion of rice straw (Production of refined pulp fibre from rice straw)

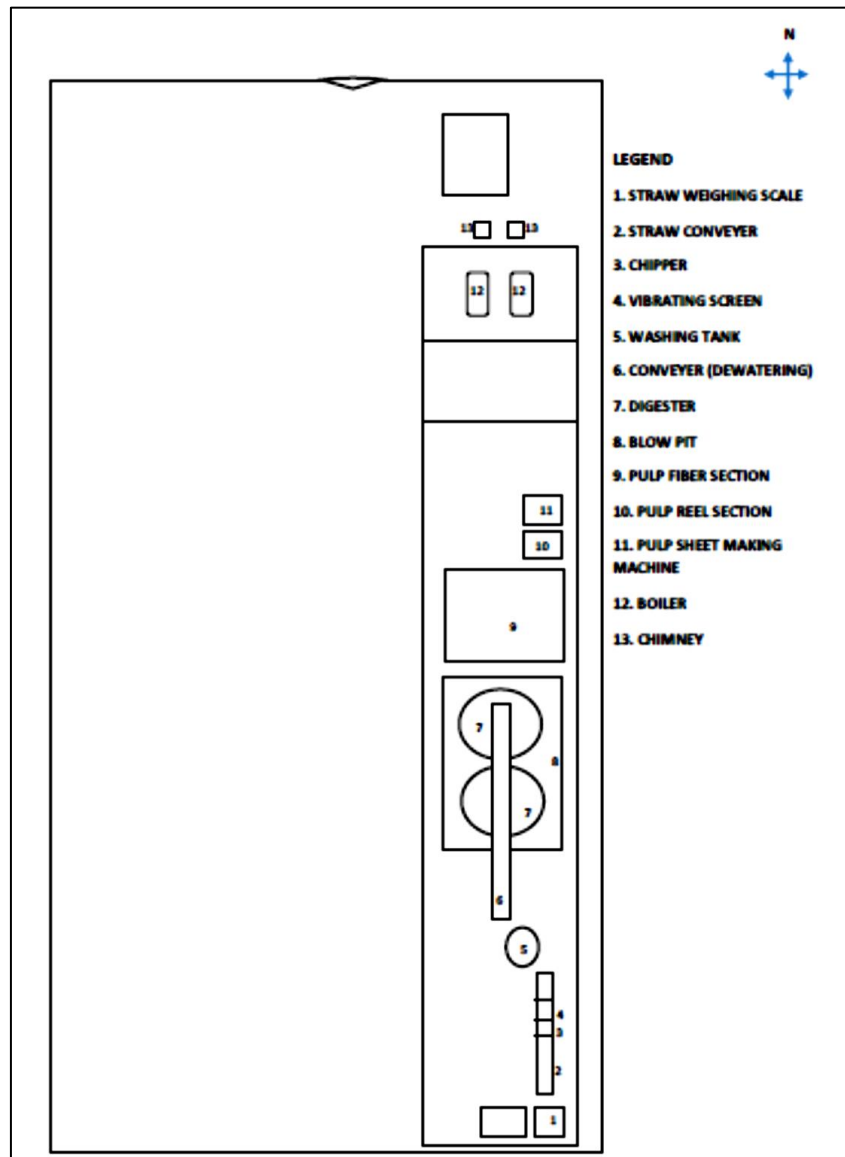


(i) Pulp sheet making and packaging



**(j) Factory Machine Layout Plan**

Machine layout plan of this factory is shown as follow and some machinery as photo in section 4.7.



**(k) List of Employees, Working Hours and Social Welfares**

There are 121-permanent male-workers and the 9-permanent female-workers.

**List of Employees**

Department	Male	Female	Total	Remark		
Office	9	7	16			
General	6	1	7			
Production	106	1	107	Shift 1; 35 male	Shift 2; 35 male	Shift 3; 36 male
Security	6	-	6	They are not included in the worker list of this factory		
Total			130			
Working hours – Office, General, Production female 8hrs/day 6 days a week – [08:00 – 16:00]						
Production – Three shift 08:00 – 16:00 8 hours/day (all male workers) 16:00 – 24:00 6 days/week 00:00 – 08:00						

**Working Hours**

Working days	Monday to Saturday
Holidays	Sunday and Gazette Holidays
No. of shifts per day	Three
Working days per year	$52 \times 6 - 30 = 282$ days

**Social Welfares**

Transportation	The ferry bus arrangement is provided for the employees who live in North Okalapa, Tamwe, and Thaketa
Accommodation and Meals	The hostels and meal for the employees from the distance

**(l) Working Hours, Working Days on Monthly and Yearly**

Daily working hours and monthly and yearly working days are as follow:

Department	Working hours	Woking days per week	Monthly working days	Yearly working days
Office	8 hours Monday to Saturday	6	24 ~ 30	240 ~ 320
Production	8 hours in shift 6 days a week	6	24 ~ 30	240 ~ 320

**(m) Products, Daily, Monthly, Yearly Production and By-products**

Nilar Pulp and Paper Mill Factory produces the rice straw pulp sheets and there is no byproduct, daily, monthly, yearly production are estimated as follow:

Product Name	A/U	Daily Production	Monthly Production	Yearly Production	Remark
Rice Straw Pulp Sheet	ton	3 ~ 5	112.5	1350	Production depends on raw materials, electricity and market.

Annual production rate is about 1350 ton per year. There is no byproduct in this factory. The product bales are shown as *Figure 4-75*.

**(n) The Water Consumption per Year and the Source of Water**

The water is available from the tube well in this factory. The daily water usage is 125,000 gallons. There are two water storage tanks having volume of 10,000 gallon each. The clean water from the boiler feed water treatment plant is used as the boiler feed water. There are two numbers of 6 inches tube wells and the depths are about 400 feet.

**Water consumption with respect to staff and industry daily**

	Water in gallon	Remark
Staff	2,500	For 130 person
Industry	122,500	



**(o) The Annual Energy Consumption**

**Electricity**

Source Ministry of Electricity and Energy (Myanmar)  
Transformer 500 kVA  
Annual Consumption 800,000 kWh

**Boiler**

Fuel for Boiler Rice husk and Saw dust  
Annual Fuel Consumption 2,800,000 kg

The energy consumption in brief is shown as follow.

**Summary of energy consumptions**

Sr.No.	Power	A/U	Quantity	Remark
1.	Electricity	kWh	800,000	
2.	Rice husk/saw dust	kg	2,800,000	Used in boiler

The electricity transformers and the control panels are shown in *Figure 4-79*.

**(p) Management of the Waste Materials (Solid Wastes, Wastewater, Vapor) and the Emissions of the Waste Materials and the Disposal Procedure in Brief**

**Emitted gas, dust, particulate matter (emission to air)**

- combusted gas from exhaust of motor vehicle and electric generator
- dust and particulate matter from rice straw loading, unloading, chipping, screening
- caustic soda vapor from caustic dissolving
- dust and particulate matter from rice husk / saw dust
- vapor and odor from digester
- dust, particulate matter and combusted gases from boiler combusting chamber and chimney
- vapor come out from kitchen by cooking

**Management Plan**

- perfect condition of engine's efficiency
- renewing the engine oil in time
- used good quality fuel
- slowly open the vent, of digester
- right ratio of fuel and air for boiler

**Waste water**

- used engine oil, lubricant, battery acid fuel
- boiler blowdown water
- washed water from resin regeneration from water treatment plant
- rice straw washed water
- waste water and spillage of digester effluent
- waste water from pulp cleaning and refining
- spillage from pulp making section
- general used water from kitchen, office, laboratory and sanetry waste

**Management Plan**

- collect systematically used engine oil, lubricant, battery acid and sell out or disposed under guideline of YCDC or industrial zone committee
- disposed after waste water are treated systematically such as aerobic, chemical treatment processes

**Solid waste materials**



- under and over size of rice straw
- reject pulp
- packaging materials for raw and product
- pieces of binding wire used in packing
- waste materials from maintenance section such as used resin, sandpaper, damaged bolt and nut, piece of metal
- ash of rice husk and saw dust
- empty can, drum of lubricant

**Management Plan**

- collect systematically and sell out or disposed
- disposed by guideline of YCDC and industrial zone committee

**(q) The amount of solid waste issued, containing substances and Management Procedure**

Solid waste may be

- piece of binding wire
- rice husk / saw dust
- empty can, drum of lubricant, engine oil
- light bulb, light strip (used, damage)
- used stationaries
- packaging materials for fruit, vegetable, and meat
- used and resin sand paper, welding rod, piece of metal
- broken
- packaging materials of laboratory chemicals
- used filter paper
- ash of rice husk and saw dust
- rice straw
- sand and dust

**Solid Waste Issued, Containing Substances and Management Procedure**

**Annual Basis**

<b>Sr. No.</b>	<b>Solid Wastes</b>	<b>A/U</b>	<b>Quantity</b>	<b>Containing Substances</b>	<b>Management Procedure</b>
1.	<b>Packing material for raw material</b>				
	- pieces of binding wire	kg	10	Iron, Zinc	Disposed by guideline of industrial zone committee and Y.C.D.C
	- empty caustic soda bag, common salt, rice husk/saw dust	bag	500	Plastic, Printing Ink	
	- empty containers of lubricants	pcs	10	Plastic, Can, Paint, Left lubricant	
2.	<b>From office work</b>				
	- Bulband lamp (used, broken, damage)	pcs	10	Glass, Metal	Disposed by guideline of industrial
	- Used stationery (used)	bulk	1	Plastic, Metal,	



**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

	paper, tonner, ball pen, correction pen)			Paper	zone committee and Y.C.D.C
3.	<b>Debris from kitchen</b> Packing material for meat and vegetable, food, waste	bulk	1	Plastic, Food, Meat, Vegetable, Oil	Disposed by guideline of industrial zone committee and Y.C.D.C
4.	<b>Waste from maintenance section</b> Used sandpaper, glove, scrap metal, piece of welding electrode	bulk	1	Paper, Cloth, Rubber, Metal	Disposed by guideline of industrial zone committee and Y.C.D.C
5.	<b>Used parts from vehicle</b> Used tire and tube Used battery	Nos.	10 5	Rubber Sulfuric acid, Plastic, lead compounds	Disposed by guideline of industrial zone committee and Y.C.D.C
6.	<b>Debris from laboratory</b> Broken glassware Packing of chemicals Filter paper Ash	bulk	1	Glass, Paper	Disposed by guideline of industrial zone committee and Y.C.D.C
7.	<b>Waste in Process</b> Undersized straw particle Undersized pulp Sand, dust Rice husk/ saw dust ash	bulk	1	Straw, Dust, Sand, Lignin, Carbon	Fire in combustion chamber and ash is disposed by guideline of industrial zone committee and Y.C.D.C



**(r) Amount of effluent and wastewater, ingredients and management procedure**

Liquid waste may be

- Effluents from sanitary
- Effluents from kitchen
- Boiler blowdown water
- Spillage liquids such as lubricant, battery acid, washed water
- Reject water and regeneration water from water treatment
- Rice straw washed water and waste and pulp water from digester

Effluent liquids and management plan are shown as follow.

Daily

Sr. No.	Wastewater	A/U	Quantity	Containing Substances	Management Procedure
1.	Effluents from sanitation by employee	gallon	2500	Urine, Feces	Decompose naturally in septic tank
2.	Effluents from kitchen	gallon	50	Oil, Food	Good house-keeping
3.	Boiler blow-down water	gallon	150	Minerals, Salt	Good house-keeping
4.	Spillage	gallon	small	Engine oil, lubricant, battery acid	Wipe out and neutralize with lime
5.	Regeneration and Reject water from water treatment plant	gallon	1000	Salt solution, Minerals	Good house-keeping
6.	Wastewater from process Straw wash	gallon	57,400	Sand, Dust	Treated and reused
	Pulp wash	gallon	48,650	Lignin, Sand	Treated and reused
	Digester water	gallon	12,250	Lignin, Caustic Soda	Treated and discharged

There are waste water treatment systems, place of disposed and recycled waste water in section 4.15.



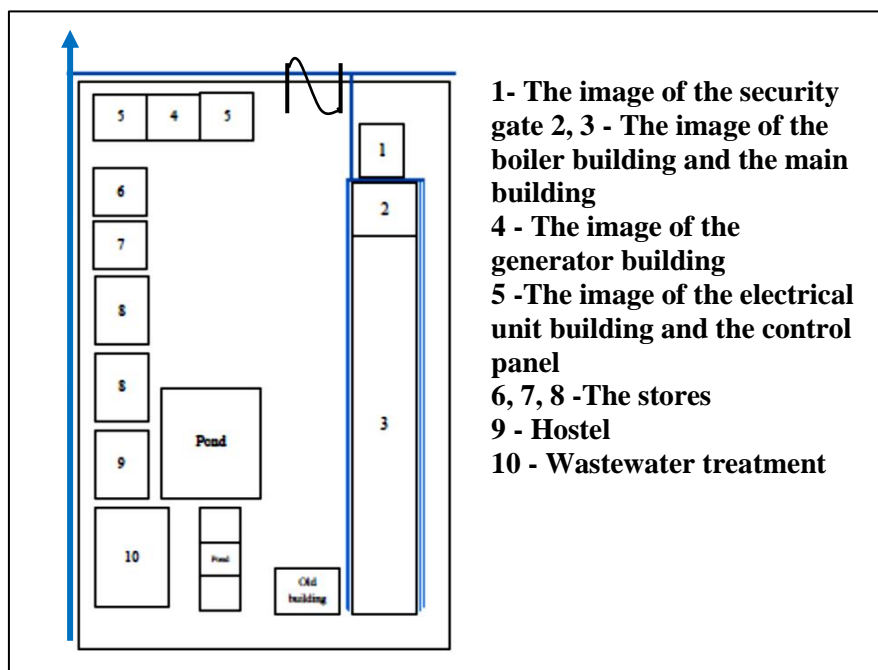
**(s) Amount of Hazardous waste, containing substances and management procedure**

Hazardous are used and damaged light lamp, bulb, battery and waste water and management procedure is following.

<b>Sr. No.</b>	<b>Hazardous Wastes</b>	<b>A/U</b>	<b>Quantity</b>	<b>Containing Substances</b>	<b>Management Procedure</b>
1.	Used and broken light bulb and lamp	bulk	1	Glass, Metal	Disposed by guideline of industrial zone committee and YCDC
2.	Used battery	pcs	5	Lead compound, Plastic, Rubber, Sulfuric acid	Sold, if not disposed by guideline of industrial zone committee and YCDC
3.	Wastewater	gallon	35,306,400	Lignin, Caustic, Pulp (high BOD, COD, TSS)	Treated in wastewater treatment plant

**(t) Storm water and drainage system**

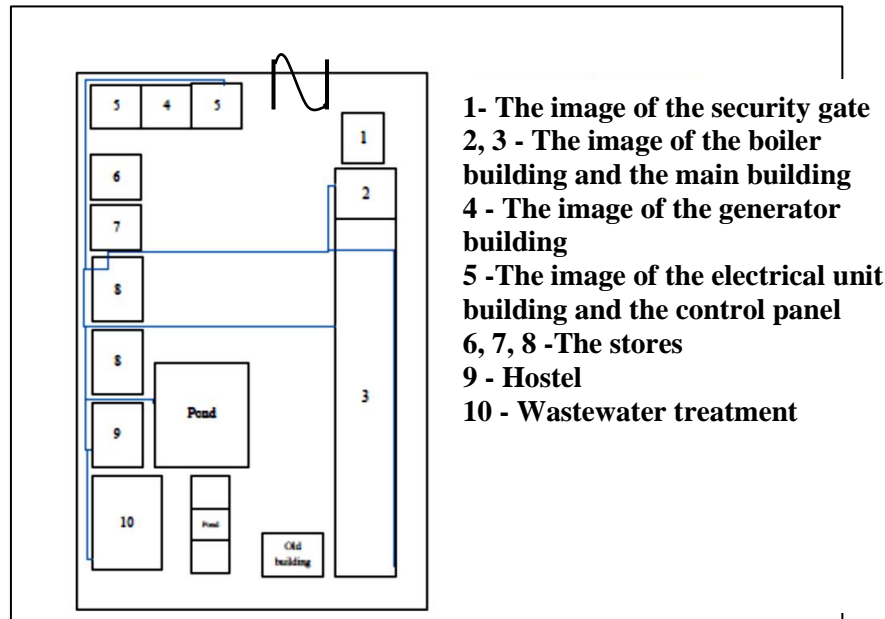
Storm water and drainage system of **URSP Mill** is shown as follow.



**Storm Water and Drainage System**

**(u) Water distribution system**

Water distribution system of **URSP Mill** is shown as follow.



**Water Distribution System**



**(v) Road Transpotation**

The transportation of raw materials and finished goods and ferry bus system for **URSP Mill employees** have been arranged as follows.

<b>Sr. No.</b>	<b>Commodities</b>	<b>From</b>	<b>To</b>	<b>Transport by</b>	<b>Remark</b>
1.	Straw	Thongwa, Khayan, Yangon Division	Factory	Motor Vehicle	
2.	Caustic soda	Yangon	Factory	Motor Vehicle	
3.	Rice husk/saw dust	Yangon	Factory	Motor Vehicle	
4.	Binding wire	Yangon	Factory	Motor Vehicle	
5.	Pulp sheet	Factory	Port	Motor Vehicle	
6.	Ferry	North Okala Tamwe Tharketa Factory	Factory  North Okala Tamwe Tharketa	Motor Vehicle	

**(w) Certificates, Licences and Instructions Conducted by Nilar Pulp and Paper Co., Ltd (URSP Mill) and Responsible Person for E.M.P and Budget Allotment**

Nilar Pulp and Paper Co., Ltd (URSP Mill) conducts the certificates, licences and instructions are mentioned at Appendix I.

**Certificates, Licences and Instructions Conducted by Nilar Pulp and Paper Co., Ltd. (URSP Mill) and Responsible Person for E.M.P Report and Budget Allotment**

Sr. No.	Description
1.	<p><b>Permits and Certificates</b></p> <p><b>Certificate of boiler utilization</b></p> <p>-Registration No. of boiler                      MASA – 4726</p> <p>Type of boiler horizontal tube, China (Manufacture date -2000)</p> <p>Allowable steam pressure                      9.5 kg/cm<sup>2</sup></p> <p>Duration time                                      16.7.2019 to 15.7.2020</p> <p>-Registration No. of boiler                      MASA – 5308</p> <p>Type of boiler                                      horizontal tube, India (Manufacture date - 2014)</p> <p>Allowable steam pressure                      10.54 kg/cm<sup>2</sup></p> <p>Duration time                                      14.8.2019 to 13.8.2020</p> <p><b>Certificate of Incorporation</b></p> <p>-Company registration                      No. 116653362</p> <p>(Former registration                      No. 3882/2011-2012)</p> <p><b>Certificate of Exporter/ Importer Registration</b></p> <p>-Registration No.                                      27679 (19.03.12)</p> <p>Start date    09.0.3.2015</p> <p>End date    14.02.2020</p> <p>(Registration is still extension)</p> <p><b>Private Industries Registration</b></p> <p>- Registration No.                                      YAKA/KYEE/1819</p> <p>Registration life expired date                      30.9.2020</p>

	<p><b>Issuing the registration certificate for utilization of 400V, 625kVA electric generator</b></p> <p><b>Safety Certificate for Utilization of Electricity</b></p> <p>-Certificate No. E.I/YD 452/1-2019</p> <p>Expired date of certificate 17.1.2020</p> <p>(Certificate is still extension)</p> <p><b>Licence for enterprise of chemicals and related substances</b></p> <p>-Licence No. 000138 (Rule 8)</p> <p>Form 2 no.of enterprise (8) Nos.</p> <p>Expired date of licence 19.11.2020</p> <p><b>Registration of chemicals and relative substances</b></p> <p>-Registration No. 000081 (27)</p> <p>Form 1 no.of enterprise (1) No.</p> <p>Expired date of Registration 27.11.2020</p> <p><b>Certificate of membership (The Republic of The Union of Myanmar Federation of Chambers of Commerce and Industry)</b></p> <p>-Membership No. &amp; Date 23722 (8.3.2012)</p> <p>Extended Period From 1.1.2019 to 31.12.2021</p> <p><b>Yangon City Development Committee</b></p> <p>-Licence of enterprise for Financial year (20.9.2020)</p> <p>Expired date 30, September, 2020.</p> <p>Licence No. 072220045</p> <p><b>Recommendation Certificate for Health and Safety</b></p> <p>-Issued by Yangon City Development Committee</p> <p>From 1.10.2019 to 31.9.2020</p>
2.	<p><b>Material Safety Data Steets</b></p> <p>Caustic Soda</p>

	Common Salt Lubricant Diesel Battery Acid
3.	<b>Budget Estimation for Decommissioning, Mitigation Measure of current impacts and Environmental Social Monitoring, Safe and Health Care and Reducing Carbon</b> - Budget estimation for decommissioning - 117,850,000 MMK - Budget estimation for mitigation measure of environmental impact current condition - 4,920,000 MMK -Budget estimation of environmental social monitoring, safe and health care, and reducing carbon - 11,700,000 MMK
4.	<b>Responsible Person for Environmental Management Plan Report (Communicable Person)</b> Name - U Tin Aung Moe Designation - Factory Manager Contact phon no. - 09-977212013

## **1.6 Description of the Current Natural Environment and Social Environment**

The current natural environment and social environment facts are extracted from the data of regional facts about Dagon Myo Thit (Seikkan) district prepared by the Administrated Department of Township and study area was as the area of that township.

### **1.6.1 Dagon Myot Thit (Seikkan) Township**

URSP Mill is situated in Dagon Seikkan Township, Yangon East District, and Yangon Region. The map of Dagon Seikkan Township is shown in section 5.1. Dagon Myot Thit (Seikkan) is set up 35 wards and 4 village groups. The area having 792.645 acres, was built as Industrail zone (1) and the area having 416.15 acres was built as Industrial zone (2). URSP Mill is situated in Industrial zone (1).

Location - N (16° 46' ~ 16° 49')

- E (96° 11' ~ 96° 13')



### **Boundry**

In the East and South	-	Thanlyin Township and Yangon South District
In the South	-	Tharketa Township, Yangon East District
In the West	-	Dagon Myot Thit (South)
In the North	-	Dagon Myot Thit (South) and Hlegu Township, Yangon North District

### **Topography**

Dagon Myot Thit (Seikkan) Township is plain and is situated 14.4 feet above the sea level. The Bago river passes through in the sea.

### **Land Use**

There are total net area of harvesting 6665 acres of total existing 21552 acres and total area of fallow land as 14887 acres.

### **Drain**

Less river / stream and Bago River is distinct.

## **1.6.2 Climate and Environment**

### **1.6.2.(1) Climate**

Dagon Myot Thit (Seikkan) Township has the warm and wet climate and highest temperature is 42°C and the lowest temperature is 16°C.

### **1.6.2.(2) The Soil Quality**

To analyze the ambient soil qualities of URSP Mill; the soil sample from empty space between the main building and the store was taken and analyzed. Chloride were present but Arsenic, Cyanide and Manganese were not found in this soil sample. These results were recorded as the base line values and should be compared by the results. The photo of sampling, place and results are described at section 5.2.2.

The soil quality of **Nilar Pulp and Paper Co., Ltd (URSP Mill)** is as follow:

Aluminum - 0.1mg/kg soil

Arsenic	-	ND
Chloride	-	0.135g/kg soil
Copper	-	ND
Cyanide	-	ND
Extractable Acidity	-	2cmol/kg soil
Manganese	-	ND
P-Alkalinity	-	0
pH	-	7.88
Total Alkalinity	-	4.24mmol/L extract
Total Iron	-	0.025g/kg soil

### 1.6.2.(3) Surface water and Ground water

There are two samples of water as surface water and ground water. First is drain water in front of factory and second is tube well water. The images of sampling, sampling place, analyzed results and comparison table of analyzed results of surface water with the NEQ (E) G guideline standard are shown at section 5.2.3. Comparison table of analyzed result and NEQ(E)G is attached here.

### Comparison Data of Analyzed Results of Surface water (In Front of factory Drain water) with Guideline Values of Pulp and Paper Mill (Unbleached Kraft Pulp, Integrated) under National Environmental Quality (Emission) Guidelines Standards

Sr. No.	Parameter	Unit	Analysis result of Surface water (In Front of factory Drain water)	Guideline Values of Pulp and Paper Mill (Unbleached Kraft Pulp, Integrated)	Less/More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	1064	0.7	+ 1063.03	
2.	Chemical Oxygen Demand	Kg/ADt	2290	10	+ 2280	

3.	pH	-	13	6~9	Over range	
4.	Total Suspended Solids	Kg/ADt	699	1	+ 698	

#### **1.6.2.(4) Air Quality**

**The air quality of URSP Mill are as follow.**

- Ambient air quality
- Workplace air quality
- Boiler stack gas quality

#### **Ambient Air Quality**

Ambient air quality of **URSP Mill** was monitored at empty space between the main building and store on 10<sup>th</sup> to 11<sup>th</sup> April 2018. The image of monitoring, place of monitoring, monitored results and comparison table of monitored result and NEQ(E)G guideline standard are shown in section 5.2.4. The comparison table of ambient air quality monitored result with NEQ(E)G guideline standard is attached here.

#### **Comparison Table of Value of Ambient Air Monitored with NEQ(E)G that of Guideline**

Sr. No.	Parameters	Unit	Ambient Air quality results	Standard Values of National Environmental Quality (Emission) Guidelines	Variation from Standard Value	Remark
1.	Nitrogen Dioxide	µg/Nm <sup>3</sup>	35.85	200ne hour)	-164.15	
2.	Ozone	µg/Nm <sup>3</sup>	17.07	100 hour)	-82.93	
3.	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	79.66	50	+29.66	
4.	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	51.61	25	+26.62	
5.	Sulfur Dioxide	µg/Nm <sup>3</sup>	0.03	20	-19.97	
6.	Ammonia	mg/L	36.84	-	-	
7.	Carbon Dioxide	mg/L	299.44	-	-	
8.	Carbon monoxide	mg/L	0.33	-	-	
9.	Volatile Organic Compounds	µg/L	0.00	-	-	
10.	Oxygen	%	21.3	-	-	

**Workplace Air Quality**

Workplace air quality of **URSP Mill** was monitored at seven points on 15<sup>th</sup> February 2018. The places of monitoring, monitoring instruments, images of monitoring, monitoring results and comparison tables of monitoring results with NEQ(E)G guideline standard are shown in section 5.2.4. The tables are attached here.

**Comparison Table of Air Quality for Workplace Monitored Values with that of NEQ (E) G Guideline**

Sr. No.	Parameter	Unit	Measured Value	Standard Values of National Environmental Quality (Emission) Guidelines	Variation from Standard Value	Remark
<b>Straw Store</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	ND	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	404	50	+354	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	396	25	+371	
<b>Near Digester</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	37	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	239	50	+189	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	252	25	+227	
<b>Caustic Soda Solution Tank</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	61.4	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	461	50	+411	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	367	25	+342	
<b>Straw Filling to Digester</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	1.8	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	418	50	+368	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	269	25	+244	
<b>Pulp Dewatering Section</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	3.7	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	239	50	+189	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	252	25	+227	
<b>Near Finished Goods</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	-	-	-	



2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	245	50	+195	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	198	25	+173	
<b>Boiler Section</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	-	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	322	50	+272	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	154	25	+129	

### Boiler Stack Gas Quality

Boiler stack gas quality of **URSP Mill** was monitored and images of monitoring, results and comparison table of results with NEQ(E)G guideline standard are shown in section 5.2.4. The table is attached here.

#### Comparison Table of Boiler Stack Gas Monitored Value with that NEQ(E)G Guideline

Parameter	Unit	Value				Small combustion facilities emission guideline	Remark
		After 15 min	After 30 min	After 45 min	After 60 min		
O <sub>2</sub>	mol %	17.8	18.2	16	20	-	NO <sub>2</sub> and SO <sub>2</sub> are in range.
CO	mg/m <sup>3</sup>	168	210	195	120	-	
CO <sub>2</sub>	mol %	2.7	3.	3.1	2	-	
NO <sub>2</sub>	mg/m <sup>3</sup>	12	4	0	30	460	
SO <sub>2</sub>	mg/m <sup>3</sup>	16	0	21	30	2000	

#### 1.6.2.(5) The Odor

While the ambient air quality and workplace air qualities were monitoring, the member of GMES team took the condition of odor by system. There were some odor but tolerable. Detail results are shown at section 5.2.5.

#### 1.6.2.(6) Noise and Vibration

The noise level of workplace of **URSP Mill** were measured on 15<sup>th</sup> February 2018 and comparison table with NEQ(E)G guideline standard is attached here.

#### Comparison Table of Noise Level (dBA) at Workplaces with that of NEQ(E)G Guideline

Sr. No.	Measured Places and Parameters	Unit	Measured Noise Level	Standard Guideline Values [NEQ(E)G]	Variation from Standard Value	Remark
1.	Straw Store	dB(A)	75.7	70	+5.7	
2.	Near Digester	dB(A)	87.15	70	+17.15	



**Environmental Management Plan-EMP****Unbleached Rice Straw Pulp Mill (URSP Mill)****Nilar Pulp and Paper Co., Ltd.**

3.	Place near Caustic Soda Tank	dB(A)	80.2	70	+10.2	
4.	Place straw filling to Digester	dB(A)	81	70	+11	
5.	Near Pulp Dewatering Section	dB(A)	88.9	70	+18.9	
6.	Near Finished Goods	dB(A)	90.1	70	+20.1	
7.	Boiler room	dB(A)	95.35	70	+25.35	

**1.6.3 Biological Components**

Dagon Seikkan Township, Industrial Zone (1) in which **URSP Mill** is located has been already established since 1994. Thus, there are no issues on biodiversity, but ecosystem beyond the industrial zone should be controlled by every emission of each factory follow the NEQ (E) G guideline values.

**The Flora**

The floras which are grown in Dagon Myot Thit (Seikkan) Township are nipa palm (dhani), mangrove trees, and khaya plants.

**1.6.4 Socio-Economic Components****1.6.4.(1) Social Facts*****High Education***

-The Nationalities Youth Resource  
Development Degree College

***Basic Educations***

Basic Education High Schools	-3 Nos.
Basic Education Middle Schools	-4 Nos.
Basic Education Primary Schools	-11 Nos.
The Nursery School	-1 No.
Monastery Education Schools	-8 Nos.
The enrollment of school-age children	-100%
The achievements of matriculation examination	
	-23.09% in 2015-2016
	-28.20% in 2016-2017
The literacy percentage	-100% (above the age of 15)
Learning and studying supported classrooms opening	-3 Nos. (B.E.H.S)
	-4 Nos. (B.E.M.S)
	-11Nos. (B.E.P.S)
The library opening	-12 Nos.



Leaning Study support

Basic Education High Schools 3Nos. on PLt-3

Basic Education Middle Schools 4Nos. on PLt-3

Basic Education Primary Schools 11Nos. on PLt-2

**1.6.4.(2) Economic Facts**

Dagon Myot Thit (Seikkan) Township is situated in Yangon Region and is also the developing township consisting of two industrial zones. Paddy cultivation and the car business are the main businesses. In this township, the mung beans and the green beans are also harvested in this area.

There are 75 industries in Industrial Zone (1), 28 industries in Industrial Zone (2) and 211 cottage enterprises with 758 employees. There are no products from the forest and the minerals. There are 5 guesthouses. The local net production of Dagon Myot Thit (Seikkan) Township is 195516.5 MMK and it is the 104.4% of the appropriation. The percentage of unemployed person is 13.01%.

**1.6.4.(3) Cultural Facts**

There are no distinct pagodas, monasteries, the monuments and the other religion buildings or places in Dagon Myot Thit (Seikkan) Township. There are 14 Pagodas, 49 monasteries, 7 nunneries and 25 chapels as religion buildings.

**1.6.4.(4) Surveying Records of G.M.E.S Team to Fulfill the Suggestion and Direction by the Environmental Conservation Department upon EMP Report for Nilar Pulp and Paper Mill Prepared Dated 2018 December**

The surveying records of G.M.E.S team for the preparation of EMP report are shown as following table 5.11.

**Survey Record of G.M.E.S Team for the Preparation of EMP Report Nilar  
Pulp and Paper Mill**

<b>SR.No.</b>	<b>Description</b>	<b>Date</b>	<b>Remark</b>
1.	Soil sampling and analyzed	15.12.2018 18.2.2018 28.2.2018	Sampling Analyzing Analyzing
2.	Ambient air quality	10.4.2018 11.4.2018 6.6.2018	Monitoring Monitoring Result issued

3.	Boiler stack gas quality	10.4.2018 11.4.2018 6.6.2018	Monitoring Monitoring Result issued
4.	Workplace air quality	15.2.2018 18.2.2018	Monitoring Result issued
5.	Ambient water and ground water sampling and analyzing	15.2.2018 28.2.2018	Sampling Result issued
6.	Wastewater	15.2.2018 28.2.2018	Sampling Result issued
7.	Site seeing and data collection	15.2.2018 16.2.2018 26.2.2018	
8.	Discussion with staff and collection the opinion, suggestion of employee	15.2.2018	Meeting
9.	Discussion with person neighbours of factory and collection the opinion, suggestion of them.	1.9.2018	Meeting
10.	Wastewater sampling and analyzing to fulfill the ECD command	16.1.2020 23.1.2020	Recorded and reporting in EMP. Section 5.5 and 6.3.

## **1.7 Identification of Impacts and Mitigation Measures**

### **1.7.1 Emissions**

#### **1.7.2 Assessment of impacts by emissions**

#### **1.7.3 Hazardous Substances**

#### **1.7.4 Description of proposed mitigation measure**

#### **1.7.5 Impacts assessment and mitigation measures**

#### **1.7.6 Guideline Limitations of National Environmental Quality (Emission) Guidelines, concerning the emitted substances from factory to environment as air, water and noise impacts**

#### **1.7.7 Explanation of the review and suggestion by the Environmental Conservation Department upon the EMP report prepared December 2018.**

### **1.7.1 Emissions**

The emissions to the environment, on the other hand, the impacts by this factory are

#### **1.7.1.(1) Emissions to air**

#### **1.7.1.(2) Emissions to water**

#### **1.7.1.(3) Emissions to soil**

#### **1.7.1.(4) Noise impact**



**1.7.1.(5) Odor**

**1.7.1.(1) Emissions to air**

Due to the operation of URSP Mill, the following activities create emissions to air; Exhaust from the Transportation Vehicles, Exhaust from the Electric Generator Sets, The Leakage of Gases, Dust and Particulate Matters Emission from the Transportation, Storing, and Chipping of the Raw Rice Straw and From Screening the Chipped Rice Straw, Fumes Due to Heat Evolved by Dissolving the Caustic Soda, Fumes and Particulate Matter Emission by Degassing of Digester, Fumes Emitted from Opening and Discharging of Digester, Vapor Emitted from Drying of Pulp Sheets, Stack Gases, Dust and Particulate Matters from the Boiler Chimney and Combustion Chamber, Flew-Off Ash of Rice Husks / Saw Dusts and Vapor Emitted from Cooking In the Employees' Kitchen.

**1.7.1.(2) Emissions to Water**

During the operation phase, wastewater is generated from the followings; Domestic Usage of Water by Employees, Washing the Machines and Tanks, Accidental spillage of transformer oils, lubricant and battery acids, Washing the Rice Straw, Spillage from the Vibrating Screens and the Dewatering Conveyor, From Washing of Pulps, Rain Water Containing Impurities, Boiler Blow-Down Water, Effluent from the Water Treatment Plant, Effluent from the Kitchen for the Employees and Effluent from the Wastewater Treatment Plant.

**1.7.1.(3) Emissions to Soil**

During the operation phase, the solid wastes consist of the following; The Wastes in the Workplace, Office Wastes, Solid Wastes from the Packaging of Straw Pulp Sheets, Dust and Particulate Matters from Transporting, Chipping and Screening the Rice Straw, The Solid Wastes in the Wastewater, Suspended Solids in the Water and Air, The Flew-Off Ash, Rice Husk/Saw Dust from the Boiler, Bottom Ash from the Boiler Combusting Chamber and Solid Wastes from the Kitchen.

**1.7.1.(4) Noise impact**

Noise impact by said factory is obvious as the noise and vibration; The Noise and Vibration of the Manufacturing Machines, The Noise and Vibration Because of the Running the Transportation Vehicles and The Noise and Vibration Because of the Running the Generators.

**1.7.1.(5) Odor**

During the operation phase, the impacts of odor to the environment are as follow; From the Vehicles Exhaust, From the Exhaust Pipes of

Generators, Odor of Black Liquor and the Caustic from the Digester, Odor from the Boiler and Odor from the Kitchen.

### 1.7.2 Assessment of Impacts by Emissions

During the production process, the impacts to the environment are described in brief as follow:

#### Summary of Impacts

Pollutants	Sources	Cause of description	Effects
<b>Air Pollution</b>			
Toxic and GHG gases, VOC	Vehicles, generators, boiler, transformers, kitchen	<ul style="list-style-type: none"> <li>- CO<sub>2</sub> and water vapor</li> <li>- When the bad quality of fuel is used, SO<sub>2</sub> gas is generated.</li> <li>- When the engine power decreases, the carbon particles and CO gases are generated.</li> <li>- Over-heating of transformer oils</li> </ul>	<ul style="list-style-type: none"> <li>-CO<sub>2</sub> is GHG gas, which causes the global warming.</li> <li>-SO<sub>2</sub>, VOC and CO gases are the severe toxic gases.</li> <li>-Carbon particles cause the respiratory diseases.</li> </ul>
Water vapor	Caustic soda solution preparation, Digester's air vent out, drying of pulp sheets.	<ul style="list-style-type: none"> <li>-Due to exothermic heat of solution</li> <li>-Temperature is high enough to drive out water as vapor</li> </ul>	-Caustic and lignin odor make irritation.
Dust	Transportation, cutting, screening of the rice straw, flew-off ash from the combustion of the rice husk/saw dust.	-Diffusion of particles in the surrounding	-Particulate matters cause the respiratory diseases.
<b>Water Pollution</b>			
Wastewater	-Daily usage by workers; washing the rice straw; machineries and the tanks; spills from the vibrating screen and the dewatering conveyor; from the wastewater treatment plant and kitchen	-COD, BOD and TSS values of the wastewater generated are high.	<ul style="list-style-type: none"> <li>- Damage the ecosystem of surrounding water.</li> <li>- Battery acids decrease the pH values of the water</li> </ul>
Liquid Spillage	-Accidental spillage of transformer oil, lubricant, battery acid, diesel and the petrol		- Oily layer on the water surface prohibits entering of oxygen and light into water
<b>Soil Pollution</b>			

Dust, particulate matters from chipping and screening of rice straw	-From production line	-If not systematically manage, the pieces of pulp and fibers when swept away by rain may cause the high the COD, BOD values of the receiving water	-Risk of fire hazards; respiratory diseases.
bottom ash; kitchen wastes office wastes;	-From Boiler From Kitchen Office		
<b>Noise and Vibration</b>			
Noise	-Operating the generators; chipping machines, pumps, the rollers, dryers, and the cutters -Driving the transportation vehicles and driving the rice straw conveyors		-Nuisance and audio disturbance.
Vibration	-Vibrating Screen		

### 1.7.3 Hazardous Substances

The hazardous substances as causticsoda, lubricant and diesel fuel, battery acid are described in section 6.3, moreover salt solution, combusted gases, carbon monoxide, sulphurdioxide, transformer oil are grouped as hazardous and ways of hazard are mentioned in brief and detail as material safety data sheet in Annexe 1.

#### 1.7.4 Description of proposed mitigation measure

##### 1.7.4.(1) Mitigation Measures for Air Pollution

##### Mitigation Measures for Air Pollution

Air Pollution
<b>Odors of The Vehicles' Exhaust Gases</b>
<b>Mitigation Measures</b> <ul style="list-style-type: none"><li>-Due to the transportation of rice straw, machines, fuels and the employees by the trucks, trolley, cars and the wheel loader, the air pollutants such as CO<sub>2</sub>, CO, SO<sub>2</sub> and carbon particles are emitted.</li><li>-Thus, it is necessary systematic management to reduce the vapor emissions to the air.</li><li>-For example: carpool with each other instead of driving separately, reducing the usage of vehicles, maintain the vehicles – get regular tune-ups, follow the manufacturer's maintenance schedule, and use the recommended motor fuel oil, usually managing the engine power of the vehicles and the machinery good power condition.</li><li>-To reduce SO<sub>x</sub> emissions, use vehicles that are more efficient and less polluting and good quality fuels.</li><li>- The emitted carbon dioxide gas and the water vapor can be reduced by planting trees in the factory backyard</li></ul>
<b>Odors of Generators' Exhaust Gases</b>
<b>Mitigation Measures</b> <ul style="list-style-type: none"><li>-The generators are used for emergency back-up when power fails. Generator exhaust contains high levels of carbon monoxide (CO), a poisonous gas that cannot be seen or smelled.</li><li>-Deadly levels of carbon monoxide can build up in enclosed or partly enclosed areas.</li><li>-To be high efficiency of engine power and routine maintenance is carried out.</li><li>-The generator <i>must</i> be at least 20 ft away from the workplace.</li></ul>
<b>Leakage of Gases from Transformers</b>



**Mitigation Measures**

-To reduce the leakage of gases from the transformers, the air-conditioners and the refrigerators, regular checking of the condition of transformer oil or refrigerant is needed.

**For Transformers**

-A leak in the radiator had caused the transformer oil level to drop below the radiator inlet, resulting in a virtual total loss of cooling.

-In other cases, investigations of elevated transformer temperatures have revealed blocked coolers and malfunctioning cooler controls.

-An oil level gauge is required so that the correct oil level can be maintained.

-Maintaining the proper oil level is extremely important because if the oil level falls below the level of the radiator inlet, flow through the radiator will cease and the transformer will overheat.

**For Refrigerators**

-Introducing measures to make the detection of leakage much easier is the quickest way for reducing refrigerant emissions.

-The use of lower Global warming potential (GWP) refrigerants, including natural alternatives such as ammonia, CO<sub>2</sub> or hydrocarbons, systematically managing the handling of air-conditioners and refrigerators, for example: installing the refri-guard (safe-guard).

-And alternative system configurations and technologies reduce the emissions.

**Particulate matters From the Loading, Storing, Chipping, Screening of Rice Straw**

**Mitigation Measures**

-The dust and the particulate matters are emitted to the air by transporting the raw rice straw, storing, loading by conveyors, chipping and screening and these are trapped by vacuum chamber not to escape to the surrounding, and undersized straw chips are collected and used as fuel in the boiler combusting house.

-The ash particles from boiler chimney are caught in cyclone separator and water scrubber so that reduced the impacts.

-The ashes from combusting chamber are disposed under management of Industrial Zone Committee and City Development Committee.

-The figure of vacuum chamber and firing the dust are shown in *Figure 6-1* and *6-2* respectively.

**Vapors from the Dissolving the Caustic Soda**

**Mitigation Measures**

-When caustic soda flakes are dissolved in the water, fumes are emitted to the air because the dissolving the caustic soda in water liberates heat.

-Slow addition of caustic soda flakes does not increase temperature very much resulting less fumes.

**Vapors and odors from releasing the entrapped air and discharging the digested pulp into the Blow Pit**

<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-When the rice straw is digested in the digester, the entrapped air in the digester is blown out to get the steam pressure fully.</li> <li>-Fumes from caustic soda solution, and VOC from discharging the digester contents to the Blow pit are entrained by the released air.</li> <li>-These are trapped by double steps catch-all system.</li> <li>-This system is shown in <i>Figure 6-3</i>.</li> <li>-The black liquor and the pulp contained with the vapors are recycled to the Blow pit and thus the impacts to the environment are decreased.</li> <li>-This black liquor and the pulp recycled pipe are shown in <i>Figure 6-4</i>.</li> </ul>
<p><b>Combustion Gases and Particulate Matters from Boiler Stack</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The boiler burns the rice husk/saw dust to generate the required steam for digestion.</li> <li>-The good induced draft fan is used to achieve complete combustion to reduce the unburnt fuel and carbon monoxide in the stack gas.</li> <li>-To reduce the spreading of the fly ash from the boiler stack, the cyclone scrubber is used. (See <i>Figure 6-5, 6-6 and 6-7</i>).</li> <li>-The combustion gases of the boiler stack are measured on 6th June 2018.</li> <li>-The results and recorded photos are shown in 5.2.4.</li> <li>-By the results, the values are within the standards.</li> </ul>
<p><b>Ashes of Rice Husk/Saw Dust</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The ashes of rice husk/saw dust are mostly generated from the boiler fire chamber.</li> <li>-These ashes are taken out systematically and are disposed according to the instructions of the Yangon City Development Committee and the Industrial Zone Committee and then YCDC keeps these ashes.</li> <li>-Disposing the ashes by wheel loader and keeping them by YCDC are shown in <i>Figure 6-8</i>.</li> </ul>
<p><b>Vapors from the Kitchen</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The odors from the kitchen are reduced by providing good ventilation and cooking beyond the duty time of the employees.</li> </ul>

**1.7.4.(1). (a) Explanations of the Review and Suggestion 6-B by the Environmental Conservation Department Upon the EMP Report Prepared December 2018**

**Review and Suggestion**

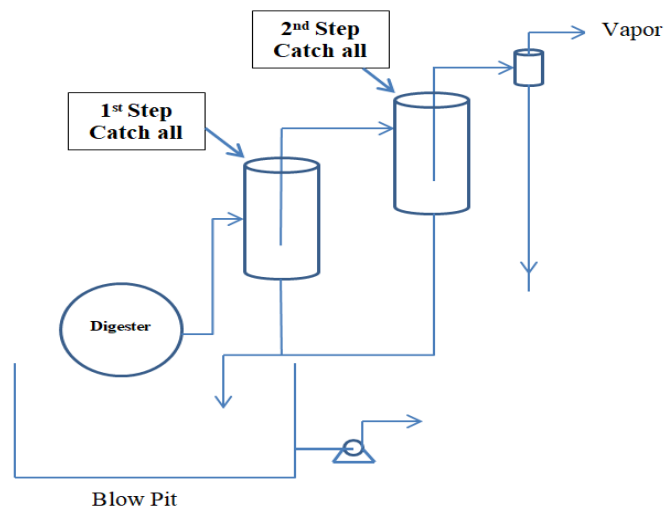
**State the plan of performance upon the combusted gas and vapor from the combustion chamber**

- Vapour, combusted gas and vapor from the combustion chamber

is caught by cyclone separator in first, by water scrubler in second and high chimney in third to reduce the entrainment of small particles.

### **Explain about double Catch all system**

Double catch all system means the system that to catch the entrainment in two steps. Rough flow diagram as follow:



When reducing the digester pressure, some liquid entrained with vapour and if there is no entrainment catching system, the entrained liquid emitted to air, water and soil. If entrainment can release and collected entrainment was returned to blow pit and further processes to be continued.

1.7.4.(2) Mitigation Measures for Water Pollution

Mitigation Measures for Water Pollution

Water Pollution
<b>Wastewater from The Employees' Daily Usage</b>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The office staffs, pulp manufacturing staffs, the security staffs, and the hostel stayed staffs use the water daily and the wastewater from employees' water usage passes through the septic tanks, the drains and is generated to the water environment.</li> <li>-The impacts are decreased by the flush water of toilets is decomposed naturally in the septic tanks and is generated to the water environment, and education and uniting the employees to reduce the over usage of water.</li> </ul>
<b>Impacts by Transformer Oils, Lubricants, and Battery Acids</b>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-When the transformer oils, the lubricants and the battery acids are refilled, renewed, reducing the spills, systematically keeping and selling the used materials, systematically disposing the materials that cannot be sold in the specific areas of YCDC are done by the skilled workers and like this, the impacts by them are decreased</li> </ul>
<b>Washed Waters of Machines, Tanks, Rice Straw, and the Pulp</b>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The wastewater generated by washing the tanks, the machines, the rice straw; filtering the water; washing the digested rice straw; and squeezed out the water are treated in the wastewater treatment plant and are disposed and so, the impacts by these wastewater are decreased.</li> <li>-The wastewater treatment flowchart and the photos are shown in <i>Figure 6-9</i>.</li> <li>-At that current condition, the waste water was sampled on the date 15-2-2018 at the outlet from factory compound and analyzed at GMES laboratory and some parameters were analyzed at Ecological laboratory.</li> <li>-The photo of wastewater collection, results of analysis and place of sampling are shown as attach.</li> <li>-Photos of wastewater collection, place of sampling were shown at <i>Figure 6-10-1</i> and <i>6-10-2</i> respectively.</li> </ul>
<b>Impacts By The Boiler Blow-Down Water</b>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-When the boiler used to generate the steam run for a long time, the impurities are cumulated in the water in boiler.</li> <li>-The lifespan of the boiler is longer by disposing some parts of water.</li> <li>-The impacts are decreased by disposing the sufficient amount of the boiler blow-down water not more or less.</li> </ul>
<b>Industrial Effluent to The Environment</b>

**Mitigation Measures**

- The wastewater generated from the Nilar Pulp and Paper Co., Ltd. (URSP Mill) was collected and analyzed; results, sampling photos, sampling points are already reported at above Paragraph.
- According to the analyzed results, BOD, COD, TSS and pH are out of range by comparing NEQ(E)G guideline values.
- So, the said factory plans the wastewater treatment for the best results with the low temperature incineration process.
- The current wastewater treatment flowchart is already shown in *Figure 6-9*.

The waste water samples are collected and analyzed and comparison table of results with NEQ(E)G guideline values for waste water, straw wash outlet, first thickener outlet are mentioned at section 6.4.2.

The current wastewater treatment plant is described and fulltime plan for treatment of waste water are also shown at that section.

Moreover to fulfill the suggestion of ECD that all parameter of NEQ(E)G guideline value of wastewater should be analyzed, there are wastewater collection photo, place of collection, analyzed results, comparison of result and NEQ(E)G guideline at section 6.4.2. Here comparison table of waste water analyzed the all parameter with NEQ(E)G guideline id attached.

**Comparison Data of Analyzed Results of Wastewater (Factory Outlet) with Guideline Values  
of Pulp and Paper Mill unbleached kraft Pulp Integrated under National Environmental  
Quality (Emission) Guidelines Standards**

Sr. No.	Parameter	Unit	Analysis result of wastewater (Factory outlet)	Guideline Values of Pulp and Paper	Less/More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	660	0.7	+ 659.3	
2.	Chemical Oxygen Demand	Kg/ADt	1330	10	+ 1320	

3.	pH	-	8	6~9	Between standard	
4.	Total Nitrogen	Kg/ADt	12	0.2	+ 11.8	
5.	Total Phosphate	Kg/ADt	2.1	0.02	+ 2.08	
6.	Total Suspended Solids	Kg/ADt	413	1	+ 412	

### 1.7.4.(3) Mitigation Measures for Soil Pollution

In **URSP Mill**, the mitigation measures of the impacts by the solid wastes are described as follow:

#### Mitigation Measures for Soil Pollution

Soil Pollution
<b>General Solid Wastes</b>
<b>Mitigation Measures</b> -The used solid wastes (e.g. the worn out papers, the old and ruined stationery, and the personal wastes of the employees – for example: the packaging materials of food, the rest foods) are kept in the dustbin with lid and firing them in boiler if they can be fired and if not, these solid wastes are disposed in the specific areas of YCDC. -The dustbin with lid is shown already in <i>Figure 4-80</i> .
<b>Dust from Loading, Storing, Chipping, and Screening the Rice Straw</b>
<b>Mitigation Measures</b> -In Nilar Pulp and Paper Co., Ltd. (URSP Mill), the impacts are decreased by the rice straw, dust, particles and undersized straw pieces generated by transporting the raw rice straw, storing, loading the rice straw by the conveyors, chipping, screening are trapped in the vacuum chamber not to escape the surrounding, and the undersized materials from the screen are collected and fired and are disposed in the specific areas of YCDC and Industrial Zone Committee.
<b>Solids Suspended in the Wastewater</b>
<b>Mitigation Measures</b> -The solid wastes involved in the washing water of rice straw, and the pulp are removed and cumulated in the Primary Clarifier-1, Primary Clarifier-2, Settling Tank-1 and Settling Tank-2 of the wastewater treatment plant and are disposed in the specific areas of YCDC. -By doing like this, the impacts by them are decreased.
<b>The Packing Materials from Manufacturing Process</b>

**Mitigation Measures**

-In Nilar Pulp and Paper Co., Ltd. (URSP Mill), the impacts are decreased by the packing materials of the materials used for manufacturing process (e.g. the bags of caustic soda, the packs of lubricants, the binding wires to tie the rice straw, the gunny ropes, the binding wire cuts of packaging of finished goods) are kept systematically and are sold if they can and if they cannot, these materials are disposed in the specific area of YCDC.

**Ashes of Rice Husk/Saw Dust from the Boiler**
**Mitigation Measures**

-The emitted ashes of rice husk/saw dust from the boiler fire section and these ashes are cleaned by the plan of YCDC and Industrial Zone Committee and so, the impacts are decreased by these actions.

**Trimming of Pulp Sheets**
**Mitigation Measures**

-When the 30" × 20" pulp sheets production is processed from Nilar Pulp and Paper Co., Ltd. (URSP Mill), the trims of pulp sheets are dissolved with water in Hydro Pulper and recycled to the vat-1,2 and is reused in the pulp sheets production process and so, the impacts are decreased by these actions.

**Solid Wastes from The Kitchen**
**Mitigation Measures**

-In this factory, the solid wastes such as the packed materials of meat, vegetables and the rest foods are kept systematically and are disposed by the plan of YCDC to reduce the impacts by these materials.

**Solid waste from maintenance section**
**Mitigation Measures**

-In this factory, solid wastes from maintenance section are collected systematically and sold out if not disposed by guideline of Industrial Zone Committee and YCDC.

**1.7.4.(4) Mitigation Measures for impacts of Noise and Vibration**

The mitigation measures for noise are described as follow.

**Mitigation Measures for Noise and Vibration**

<b>Noise and Vibration Impacts</b>
<b>Transportation of Vehicles</b>
<p>-The vehicles are used to transport rice straw, rice husk, saw dust, lubricants, diesel, petrol, employees and pulp sheets.</p> <p>-Because of using the cars, the trolley and wheel loader, the noise and the vibration are caused.</p> <p>-The noise and the vibration can be decreased by repairing and checking the toughness of the vehicles; the power of the vehicles, the suspension of the car body, the exhaust pipes and the silencers.</p> <p>-The impacts to the environment are decreased by avoiding the leisure time of the employees.</p>
<b>Operation of machineries</b>
<p>-Transporting the rice straw; chipping; processing the vibrating screen and the digester; blowing out from the digester; the driving of the pulp pumps, the pulp squeeze machines, the pulp cleaners, the press drum of pulp and the cutters of the pulp sheets; the driving of the boiler induced draft fans and the blowers of the putting the rice husk/saw dust make noise.</p> <p>-The alignment of the machines, the toughness, refilling the lubricants, the normal tension of fan belts, and the tightening the foundation bolts and nuts are checked and mended to reduce the impacts by these actions to the environment.</p>
<b>Provision of PPE</b>
<p>-Proceeding to wear the protection equipment such as the ear cover and the shoes, and the hats for the employees; transferring the duty places not to be long time working in one place are processed to reduce the impacts by the noise and the vibration.</p>

**1.7.5 Impacts assessment and mitigation measures**

In this section there are three parts as

- Nature of Impact
- Impact Assessment Methodology
- Impact Assessment and Mitigation Measure

**Nature of Impact**

The environmental conditions of **Nilar Pulp and Paper Co., Ltd (URSP-Mill)** are mentioned at present section, such as impacts on air, soil, water, noise and odor during production and distribution of product. The





impacts are classified as positive and negative.

### **Impact Assessment Methodology**

The significance of the impacts of said factory is formed by using the **Plomp (2004) Matrix**. In this method, significance, duration, scale, magnitude and probability are main keys and using the following formula.

$$\text{Significance} = (\text{Duration} + \text{Scale} + \text{Magnitude}) \times \text{Probability}$$

### **Impact Assessment and Mitigation Measure**

In this sub-section calculations of impact significances for before and after mitigation on air, water, soil, noise and odor are mentioned.

#### **1.7.6 Guideline Limitations of National Environmental Quality (Emission) Guidelines, concerning the emitted substances from factory to environment as air, water and noise impacts**

In this section notification proceeded the Industry guideline at NEQ(E)G.

There are 3 parts as

- Air Emission (most common pollutants and combustion)
- Noise level (education and industrial, commercial at day and night time)
- Effluent levels (unbleached kraft pulp, integrated).

#### **1.7.7 Explanation of the Review and Suggestion by the Environmental Conservation Department upon the EMP Report Prepared December 2018**

**State the performance on the good and enough air ventilation and light intending for workplace**

There are vacuum chamber and outdoor dust collector to catch the dust particle at the rice straw preparation section to reduce dust in atmosphere. There

machines are already shown at *figure 6-1 (a), figure 6-1 (b)*.

There are natural air canopy ventilation, opening the upper side walls and wide main door for good and enough ventilation.

Figures of air canopy ventilation, opening the side upper side wall and wide doors are shown as *figure 6-11, figure 6-12, figure 6-13*.

## **1.8 Risk Assessment**

Risk assessment is separated two parts as

1.8.1 Natural disaster assessment including climate change

1.8.2 Risk assessment by rice straw pulp sheet manufacturing plant

### **1.8.1 Natural Disaster Assessment Including Climate Change**

In this section natural disaster in Myanmar from 1900 to 2014 are summarized.

### **1.8.2 Risk Assessment by Rice Straw Pulp Sheet Manufacturing Plant**

In this section risk assessment on air, water, soil and noise by the production and distribution of product of **URSP Mill** are stated.

**The Impacts to the Air**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	Spreading the dust and the particles; the emission of the combusted gases and the leakage of gases; and the emission of bad smells
<b>Risk Assessment</b>	Explosion may undergo when dust, air and spark were together in right composition. Nuisance, eye irritation, respiratory infection, probability suffer cancer.
<b>The sources of the impacts</b>	<ul style="list-style-type: none"> <li>The emitted particulate matters and the gases from the generator exhaust pipes and the cars for transporting the raw material, the finished products, the machines, the employees' ferry</li> <li>The leakage of the gases</li> <li>The emitted dust and the particles from the loading, transporting, chipping and screening of the rice straw</li> <li>The emitted vapors and the odors from disclosing the digester when the rice straw, the caustic soda and the steam are digested in the digester</li> <li>The generating the sulfur dioxide from using the bad quality of diesel</li> <li>The combusted vapors and odors from combusting the rice husk/saw dust fuels</li> <li>The spreading the ashes of rice husk/saw dust</li> </ul>
<b>The impacted areas</b>	<ul style="list-style-type: none"> <li>The peoples along through transportation route of raw rice straw, the finished goods and the machines</li> <li>The employees within the factory yard</li> </ul>
<b>The impacted amount and duration</b>	<ul style="list-style-type: none"> <li>The impacted amount is low to the peoples and the impacted duration is short.</li> <li>For the employees, the impacted amount is medium and the impacted duration is longer.</li> </ul>

<b>The mitigation measures for the impacts</b>	<p>In order to drive powerfully the vehicles, the machines, and the generators, the repairing the machines do systematically; the lubricants are refilled punctually; the toughness is done; and the checking the temperature, the desiccant, and the level of oil of the transformers do.</p> <p>Managing the dust and the particulate matters removing machines in the raw loading, transporting, chipping, screening sections in order to drive powerfully and supervising from the experts.</p> <p>If possible, electrostatic precipitator should be used for dust collection.</p> <p>Being powerful the machine of vapor and particles trapped when the digester is disclosed.</p> <p>Using the good quality of fuels</p> <p>Taking a time to dissolve the caustic soda and the water.</p> <p>To be complete combustion in the boiler by the right ratio of fuel and the air.</p> <p>Being powerful the cyclone particle trappers, and the water-sprayed particle trappers to catch the spread ashes of rice husk/saw dust from the boiler stack.</p> <p>Doing not to cumulate the ashes of rice husk/ saw dust.</p>
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### **The Impacts to the Water**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The wastewater from the unsystematic disposal of the employees</p> <p>The accidental spills from refilling the lubricants, the transformer oils, and the battery acids</p> <p>The washed waters of the machines, tanks the rice straw and the rice straw pulp</p> <p>The boiler blow-down water</p> <p>The back-washed water and the regenerated water from the water treatment plant</p> <p>The wastewater from the employees' hostel</p> <p>The wastewater from the wastewater treatment plant</p>

<b>Risk Assessment</b>	<p>Due to high BOD, COD, TSS values, the ecosystem changes, pH of surrounding water and soil change light and air are prevent to transmit to under water kingdoms.</p> <p>Battery acid makes pH changes of surrounding water, Corrosion and irritation to metal, skin</p> <p>Carcinogenic</p> <p>Lubricant oil prohibit the light and air to underground water</p> <p>Transformer oil is carcinogenic</p>
<b>The sources of the impacts</b>	<p>Be unsystematic; not following the disciplines; breaking the instructions; and the leaking the joints of pipe lines</p>
<b>The impacted areas</b>	<p>Along the drain in the factory yard and the drain of industrial zone</p>
<b>The impacted amount and duration</b>	<p>The impacted amount to the factory's environment is medium and the impacted duration is medium long.</p> <p>The impacted amount to the employees is low and the impacted duration is short.</p>
<b>The mitigation measures for the impacts</b>	<p>Be systematic; following the instructions and disciplines; checking accurately; educating if do not follow; taking the actions; systematically keeping and selling; disposing in the specific areas of YCDC and the Industrial Zone Committee if not sell.</p> <p>Disposing the sufficient amount of boiler blow-down water</p> <p>Doing the sufficient times for back-washing and regeneration of water treatment plant.</p> <p>Doing the treatment of wastewater from the wastewater treatment plant to reach the guidelines of <b>NEQ(E)G</b> by <b>low temperature incinerator and dissolved air floatation processes.</b></p> <p>Educating and be unity not to overuse the water in the employees' hostel and the kitchen</p>

**The Impacts to the Soil**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The solid wastes from daily used materials of the employees</p> <p>The damaged and used materials from office works, manufacturing process</p> <p>The ruined materials used in manufacturing process</p> <p>The solids from loading, transporting, chipping, screening and washing the rice straw</p> <p>The emitted ashes from the boiler stack</p> <p>The emitted ashes from the boiler combustion chamber</p> <p>The solid wastes from the employees' hostel and the kitchen</p>
<b>Risk Assessment</b>	Composition of soil, water change, Changing the flow direction of stream, river the shallow the depth of water
<b>The sources of the impacts</b>	Be unsystematic; and not following the instructions
<b>The impacted areas</b>	The peoples near the disposing place of the solid wastes and the factory's environment and the employees
<b>The impacted amount and duration</b>	The impacted amount is low and the impacted duration is short.
<b>The mitigation measures for the impacts</b>	<p>Educating to do systematically; checking; and taking actions</p> <p>Systematically keeping and selling; disposing in the specific areas of YCDC and Industrial Zone Committee</p>

### The Impacts of the Noise

Nilar Pulp and Paper Co., Ltd (URSP Mill)	
<b>The impacts</b>	<p>The noise and the vibration from driving the cars to transport the raw, products, the machines, and the employees and the generators</p> <p>Driving the rice straw loaded conveyors, chippers, vibrating screens, digesters, vent out the air from the digester, transfer to blow pit, the pumps, the squeezers, dryers to heat the pulp sheets, the cutters of the pulp sheets, the boiler feed water pumps, the boiler induced draft fans, and the blowers of the rice husks</p>
<b>Risk Assessment</b>	Nuisance and audio Disturbance
<b>The sources of the impacts</b>	<p>Bad maintenance to repair the machines (e.g. the impairment of the exhaust silencers; not right aligning the machines; not doing the refilling the lubricants; not tightening the foundation bolts and nuts; not adjusting the belts) and doing hurriedness the steam blowing into the digester.</p>
<b>The impacted areas</b>	<p>The peoples along through transportation route of raw rice straw, the finished goods and the machines</p> <p>The employees within the factory yard and near the factory's environment</p>
<b>The impacted amount and duration</b>	<p>The impacted amount to the people is low and the impacted duration is short.</p> <p>The impacted amount to the employees within the factory yard is medium and the impacted duration is long.</p> <p>The impacted amount to the employees near the factory is low and the impacted duration is long.</p>
<b>The mitigation measures for the impacts</b>	<p>Maintenance the exhaust system of the cars and the generators; maintenance of the machines; being good the refilling the lubricants and mending in-time; avoiding to work with the leisure time of the employees; giving the personal protective equipment for the employees; and no longer the duty time in the noisy place for the employee</p>

### **The Impacts of the Odor**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	The odors of the emitted gases from the exhaust pipes of the cars and the generators The emitted caustic odors from dissolving the caustic soda with water The odors of caustic black liquor from the digester blow-down The odors from the boiler stack The odors from the kitchen
<b>Risk Assessment</b>	Nuisance and bad sensory
<b>The sources of the impacts</b>	Reducing the engine power; decreasing the lubricants; reducing the engine power by the dirty lubricants; using the bad quality of lubricants; and no taking the time to dissolving the caustic soda; no taking the time to blow-down the digester; no taking the time to cool down; not being right ratio of the air and the fuel
<b>The impacted areas</b>	The peoples along through the cars route The employees within the factory yard
<b>The impacted amount and duration</b>	The impacted amount to the people is low and the impacted duration is short. The impacted amount to the employees is medium and the impacted duration is long.
<b>The mitigation measures for the impacts</b>	Being ensure the engine power full; using the good quality of fuels; refilling in-time the lubricants; keeping the heat generated rate from dissolving the caustic soda; taking the time to blow-down the digester; and being the right ratio of the air and the fuel

## **1.9 PUBLIC CONSULTATION AND DEVELOPMENT PROGRAM**

Public consultation and development program were carried out by following six headings:

- 1.9.1 Consultation of factory staff and employees
- 1.9.2 Consultation of public and neighbors of factory
- 1.9.3 Informing the suggestion and opinions of factory staff, employees and public to the factory manager
- 1.9.4 Receiving the programs of factory to fulfil the suggestion and opinions of public consultation





1.9.5 Development program

1-9-6 Plan for CSR and Budget allotment

**1.9.1 Consultation of Factory Staff and Employees**

The staffs of of GMES met some person of factory at meeting room on 5<sup>th</sup> February 2018 and they were urged to suggest or give opinions about the occupational health, conditions of social relation among them. Three are the 23 numbers of attended and 22 numbers of suggestion. The photo of meeting, opinions of factory staffs are attached at *Annex-II*.

The suggestion and opinions were briefly described as follow:

- The majority except 2 persons mentioned that they are provided with the personal protection equipment, and purified drinking water.
- Most persons except 3 mentioned the water closets are enough and clean
- Most persons mentioned the sanitation system is good but 7 persons did not agree.
- 7 persons mentioned that the workplace was not noisy; and 2 persons mentioned it was tolerable, whereas 13 persons mentioned they were disturbed by loud noise
- 5 persons mentioned there was no bad odor nor vapor, but 17 persons mentioned about the bad odor
- 18 persons, except 4, were satisfied with the light intensity of workplace
- Regarding the fine particles in workplace, 11 persons recommend, 9 persons not and one person fair.
- About the ventilation of workplace, 12 persons recommend and 7 persons not.
- About the social relation, 5 persons mentioned it was inconvenient with upper level.
- Other statements are:
  - ~ To provide Occupational Safety and Health-care for each employee. (e.g. Regular medical check-up once per month)
  - ~ To support the employee with long service years
  - ~ It is of utmost important to provide sufficient personal protection equipment
  - ~ Medical check-up for staff once per month.

The above mentioned facts were collected and sent to the responsible person of factory.

The factory personnel will carry out their suggestion.

**1.9.2 Consultation of Public and Neighbors of Factory**

In order to get the suggestions and opinions of public and neighbours of factory on the production and distribution of **URSP Mill**, factory responsible person and person of **GMES** arranged the consultation meeting at No.89, Ward Administrative Office, Dagon Seikkan Township, on 1<sup>st</sup> September 2018. There were 30 persons in attendant list and 23 suggestions in that meeting. These suggestions and photographs of meeting were attached at *Annexe-III*. The brief of suggestions and opinions are as follow:

- ▶ Job opportunity is more and no adverse effect on environment due to this factory construction, operation and welcome to carry on this condition
- ▶ Not become the retard the drainage flow and off-odor due to waste of factory from drain line
- ▶ Not to be off-odor of caustic soda when raw material to product process
- ▶ To be managed continuously by authorized organization in order to exactly be under laws and regulations acted by State
- ▶ Job opportunities and social economic condition be better and more convenient due to the factory existing, the drainage line is more important for waste materials and suggest to be cleaned the drain line frequently; the remaining conditions are good and there is no adverse effect by factory
- ▶ There may be blocking the drain line when factory ends operation
- ▶ There be necessary controlled in systematically about fire problem due to rice straw as raw material
- ▶ There may be some health problems to public, due to odor of smoke when factory operation, so should manage properly
- ▶ There should be noise on environment when operation, should manage properly
- ▶ There should dispose and prevent properly the dust, odor, liquid waste and fire hazard by the adverse impacts of factory
- ▶ There must find out the technologies which change the adverse effect to positive impact; bad odorous liquid to non-odorous
- ▶ There must be discussion with experts about hazardous impacts
- ▶ There must take notice the adverse effect to destroy the environment as well as good effect when do work and as much as possible not to affect the environment. Workmen take-care the dust and particulate matter at chipping place and must use facemasks. Systematic issuing for vapor and carbon dioxide should be essential.
- ▶ There should cooperated with a ward administrative person
- ▶ There should be health care person in factory
- ▶ There should be safety organization and communicate to authorized organization in time
- ▶ There should be management committee to keep off-odor from machines
- ▶ Keep noise in safely
- ▶ There should be fire bridge to prevent fire hazard
- ▶ There should be organization take-care employees to support necessary
- ▶ There should be systematic wastewater disposal
- ▶ Dispose the debris systematically
- ▶ There must be clean factory surrounding
- ▶ Take-care fire hazard in special motive
- ▶ Prevent fire hazard, adverse impact on environment and reduce wastewater
- ▶ There should not issue the dust and particulate matter mixing in the chimney
- ▶ There should be the height of chimney in highest position as possible as
- ▶ There should not dispose the wastewater containing caustic soda to stream, river

and ocean

- ▶ There should install the fire hydrant to fight the fire when catch fire
- ▶ Not catch fire
- ▶ Not adverse effect on environment and air
- ▶ There should be good flow at factory surrounding
- ▶ Transfer the wastes to specified places
- ▶ There should authorized person of factory check the surrounding frequently
- ▶ There should be meeting among factory authorized person and public
- ▶ There should pray for both benefit between owner and employee and appreciate for the suggestion and discussion
- ▶ There should be necessary not to contaminant environment by rice straw, as raw material
- ▶ There should be systematic drain, not to contaminated water and off-odor when dispose wastewater
- ▶ There should take care the fire hazard especially due to storing the rice straw in the factory
- ▶ There is very important not to pollute the air and adverse impact to the surrounding by the dust come out when the rice straw is chipped as raw material
- ▶ There is also important to be safe electrical shock and machines are kept at the isolated space not to be noise to the environment
- ▶ There is necessary to non-contaminant the rice straw fungi and if not; adverse health for employees may occur
- ▶ There is necessary to be safe for fire due to rice straw as raw material
- ▶ There is necessary to be isolated not to disturb the surrounding when the rice straw transport
- ▶ There should be necessary to be safe and systematic condition when wastewater handle because of rice straw as raw material
- ▶ There should be safe electrical shock for staff because of machinery concerning
- ▶ There should be dispose the wastewater of factory systematically
- ▶ There should be prevent the fire hazard systematically
- ▶ There should prevent the fire hazard
- ▶ There should dispose the wastewater systematically
- ▶ There should be necessary not to come out the dust and particulate matter
- ▶ There should be necessary to take care fire hazard; not to contaminated on environment by dust, odor and not to come out polluted wastewater
- ▶ There are prevention of fire hazard, safety, good conditions of drainage, clean area a week in factory site using PPE
- ▶ There should take notice specially fire hazard due to inflammable rice straw as raw material

### **1.9.3 Informing the Suggestion and Opinions of Factory Staff, Employees and Public to the Factory Manager**

The suggestions, opinions of factory staff, employees and public are



collected, studied, gisted and sent to the factory manager and in order to fulfil their desires. The letter of GMES team including their desires sent to factory manager in attached at *Annexe-V*.

#### **1.9.4 Receiving the Programs of Factory to Fulfil the Suggestion and Opinions of Public Consultation**

There was a replying letter from the factory, about informing letter stated at paragraph 8.3, attached *Annexe-V*.

#### **1.9.5 Development Program**

The activities of **URSP Mill** as development program are:

1. Monthly birthday party for staff and employee
2. Annual Kahtain Robes is donated
3. Donation for 500,000 Kyats for Manata Group Min Tut Myot; Chin Division
4. Donation for 10,000,000 Kyats for Myanmar Pulp and Paper Association. Certificates of donations and photographs of birthday party are attached.

Estimated budget of C.S.R is planned as 2.0% of annual net profit and plan for development program is

- i. Monthly birthday party for staff and employees
- ii. Annually Kahtain Robes donation
- iii. Occasional donation for natural disaster and other emergency condition

#### **1.9.6 Planfor CSR and Budget Allotment**

The facts mentioned at Section 8.5 should be carried onfollowing years as CSR plan and it is intended to 2% of annual net profit as CSR budget.

### **1.10 Decommissioning Procedure**

If **Nilar Pulp and Paper Co., Ltd**faces in decommission URSP Mill by the various factors, the impacts to the air, water, soil, and the impacts of the noise, the vibration and the environmental and socio-economic impacts must be managed systematically. Decommissioning procedure should be carried out by the following steps:

1.10.1 Objectives

1.10.2 Organize the decommissioning team

1.10.3 The duties and responsibilities of members

1.10.4 The source of the impacts, the impacted areas, the impacted amount and period and mitigation measures for impacts by the decommissioning

1.10.5 The estimated expenditures and schedule of the decommissioning

### **1.10.1 Objectives**

The objectives of decommissioning are:

- to minimize the adverse impacts on surrounding
- to maximize the positive impacts on surrounding

### **1.10.2 Organization of the Decommissioning Team**

The owner or factory manager nominates the name of person and duties of them for decommissioning team in order to carry out the objectives. The organization is founded by:

- ◆ team leader
- ◆ the representative of office
- ◆ The representative of electrical section
- ◆ The representative of mechanical section
- ◆ The representative of financial section
- ◆ The representative of socio-economical section

There should be based on the team mentioned at Section 10-1-1.

### **1.10.3 The Duties and Responsibilities of Team Members**

In this section duties of team leader; offices representative; electrical section representative; mechanical section representative; financial section representative and social- economical section representative are described in section 9.3.

### **1.10.4 Source of Impacts, Impacted Areas, Impacted Amount, Period and Mitigation Measures for Decommissioning Phases**

In this section, source of impacts; impacted area, impacted amount, period and mitigation measures of air, water, soil, noise and social economic sectors by decommissioning are described.

### **1.10.5 The Estimated Expenditures and schedule of the Decommissioning**

In this section Estimated Expenditures of the decommissioning as 117,850,000 MMK and scheduled are described as follow.

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**Nilar Pulp and Paper Co., Ltd.**

**The Decommissioning schedule for Nilar Pulp and Paper Co., Ltd. (URSP-Mill)**

SR. No.	Procedure	Weeks																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	Organizing the decommissioning team and assaigning the duties and responsibilities																	
2.	Transpotation the raw materials (left as rice straw, rice husk, saw dust, caustic soda, binding wrie etc.)																	
3.	Removing the office documents, the materials from laboratory, hostile kitchen																	
4.	Contracting the contractors																	
5.	Manage the electrical safety for further procedure																	
6.	Removing the transformer, electrical lines, electrical mechinery																	
7.	Dismantleting the machines, pipe lines and removing																	
8.	Demolition the buildings and removing (security gate, boiler and main building, 2 building for generator and control, water treatment building, dinning room, and wastewater treatment building																	
9.	Removing the water distribution system and storage tank, pipe lines and underground pipe																	
10.	Transpotation of weighing bridge																	
11.	Transpotation of boiler																	
12.	Disposal of septic tank, sewage																	
13.	Digging the foundation and removing																	
14.	Refiling the earth to																	
15.	Growing the plants																	



### **1.11 Environmental and Social Management Plan**

Environmental and Social management plan is described as two categories, following

1.11.1 Scheme of Organization to Implement the Environmental and Social Management Plan

1.11.2 Commitment by Nilar Pulp and Paper Mill (URSP Mill)

#### **1.11.1 Scheme of Organization to Implement the Environmental and Social Management Plan**

Schemes of organization to implement the environmental and social management plan are following:

1.11.1.1 Set up the organization of environmental and social management plan

1.11.1.2 Duties and responsibilities

1.11.1.3 Monitoring and reporting

1.11.1.4 Possible environmental and social impact in brief

1.11.1.5 Mitigation measures of current impacts

1.11.1.6 Mitigation measures of impacts in future

1.11.1.7 Scheme of response, preparation, training when the factory faces in emergency condition

1.11.1.8 Parameters, procedures, time schedule, specified place, frequency and approved methods for environmental quality monitoring

1.11.1.9 Public participation and development

1.11.1.10 Skill development and training schedule

1.11.1.11 Person and organization implement the environmental and social management plan; estimated expenditure

1.11.1.12 Setting up the organizations

1.11.1.13 Scheme performed by environment and social management committee

1.11.1.14 Budget estimation for environment social monitoring, safe and health care, and reducing carbon

##### ***1.11.1.1 Set up the organization of environmental and social management plan***

The environmental and social management organization in section as following

**Organization of Environmental Social Management Plan**

<b>SR. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Service Life</b>	<b>Education</b>	<b>Duties</b>	<b>Remark</b>
1.	U Tin Aung Moe	Factory Manager	12	Basic High school	Manager	
2.	U Zaw Latt	Production Head	10	B.Sc (Chemistry)	Production	
3.	U Zaw Htwe Naung	HR Head	7	B.A (Myanmar)	Office	
4.	Daw Soe Soe Paing	Finance Head	1	B.A (Economic)	Finance	

**1.11.1.2 Duties and responsibilities**

In this section, duties and responsibilities of **leader; production department representative; administration department representative; finance department representative** are described.

**1.11.1.3 Monitoring and Reporting**

In this section Monitoring and reporting are as workplace monitoring, incident, accident and emergency reporting and measuring the performance with indices, interpreting and acting by indices.





**Workplace Monitoring**

Workplace monitoring is performed as following.

<b>Nilar Pulp and Paper Co., Ltd. (URSP Mill)</b>			
<b>The facts of workplace</b>	<b>Parameters that should be measured</b>	<b>Check points</b>	<b>Measurement frequencies</b>
The air quality at workplace	The emitted vapors Nitrogen Dioxide, Ozone, Particulate Matter PM <sub>10</sub> , PM <sub>2.5</sub> , Sulfur Dioxide	The place of rice straw stored The place of the rice straw digesting The place of caustic soda storing The place of filling the rice straw to the digester The place of pulp sheets drying The place of finished goods storing The boiler room	Twice a year
The wastewater quality at workplace	<b>Pulp and paper Mill (Unbleached Kraft Pulp, Integrated)</b> 5-day Biochemical Oxygen Demand Chemical Oxygen Demand pH Total Nitrogen Total Phosphorous Total Suspended Solids	The drain from the factory outlet The straw wash water The wastewater from the thickener	Once a month

The health, the safety and the prevention of fire risks	Using the personal protection equipment, e.g. rubber gloves, cloth gloves, goggles, the chest cover, the knee cover, the safety boots, the tester, the signboards of warning the danger, the first aid kit, writing the accident report, medical checkup data, the medical checkup records, the fire extinguishers, the instructions for emergency contacts	The all places that may be occurred	Always
The noise	The level of noise (dBA)	The place of rice straw stored The place of the rice straw digesting The place of caustic soda storing The place of filling the rice straw to the digester The place of pulp sheets drying The place of finished goods storing The boiler room	Twice a year

### **Incident, Accident and Emergency Reporting**

Incident, Accident and Emergency Reporting are performed by three forms of 'Reporting the extraordinary event', 'accident report' and calculation by indices.

### **Measuring the Performance with Indices, Interpreting and Acting by Indices**

At the said factory, accidents are recorded and calculated the Accident Indices and concluded that, factory directed to good or adverse

condition by analyzing the indices. Calculating form is described at section 10.1.3.

#### **1.11.1.4 Possible environmental and social impact in brief**

Due to production and distribution of pulp sheet by **URSP Mill**, the environmental and social impacts were identified as follow in brief:

<b>Sr. No.</b>	<b>Impact Surrounding</b>	<b>Adverse Effects</b>	<b>Remark</b>
1.	Ambient and workplace air	<ul style="list-style-type: none"> <li>- Dust and Particulate Matter emission</li> <li>- Combustion gases</li> <li>- Gas leakage</li> <li>- Off odor</li> <li>- May explode when dust (Particulate Matter), air and spark together.</li> <li>- Particulate Matters cause respiratory diseases.</li> <li>- Normal combustion gas CO<sub>2</sub> makes global warming</li> <li>- Extraordinary condition gas CO and SO<sub>2</sub> are poisonous gases.</li> <li>- Carbon particle cause respiratory disease</li> <li>- Transformer oil may be carcinogenic</li> <li>- HFC, from air conditioning and refrigerator destroy ozone layer</li> <li>- Off odor of caustic soda make irritate</li> </ul>	
2.	Surrounding water	<ul style="list-style-type: none"> <li>- High concentration of impurity by R.O reject water, boiler blowdown water</li> <li>- Common salt solution for resin regeneration</li> <li>- Spillage of lubricant, battery acid</li> <li>- High BOD, COD, TSS in wastewater such as straw wash, fiber wash water, etc</li> <li>- Common salt solution cause metal corrosion</li> <li>- Battery acid causes skin and metal corrosion, change pH of water</li> <li>- Lubricant prevents the light and air to penetrate the water</li> <li>- high BOD, COD, TSS change ecosystem</li> </ul>	

3.	Surrounding Soil	<ul style="list-style-type: none"> <li>- Non-degradable plastic causes soil proportion change</li> <li>- ash of rice husk or saw dust make changing the water flow direction, shallow coast, change soil proportion</li> <li>- Battery acid change pH of soil</li> <li>- Lubricant prevent the penetration of air to soil</li> </ul>	
4.	Employee	<ul style="list-style-type: none"> <li>- Hot burn by steam</li> <li>- respiratory diseases</li> <li>- unpleasant effects by noise</li> </ul>	
5.	Social Environment	Ecosystem change	

#### **1.11.1.5 Mitigation Measures of Current Impacts**

Mitigation measures of current impacts by production and distribution of pulp sheet by **URSP Mill** are described at section 10.1.5 and budget estimation as 4,920,000 MMK.

#### **1.11.1.6 Mitigation Measures of Impacts In Future**

At **URSP Mill**, mitigation measures of impact in future were carried out by the financial condition of company and government aid available. It was summarized as following table.

<b>Sr. No.</b>	<b>Impact Area</b>	<b>Mitigation Measure</b>	<b>Benefit</b>
1.	Air	Change the fuel system by liquid or gas fuel instead of solid fuel (rice husk and saw dust) in boiler	Reduce carbon monoxide, sulfur dioxide, ash and particulate matter
2.	Soil	Change the fuel system by liquid or gas fuel instead of solid fuel (rice husk and saw dust) in boiler	Impact by ash was eliminated
3.	Underground Water	Separate out the straw wash water treated and reused	Save water consumption
4.	Water	Research and develop in lignin utilization	Valuable product and waste volume become less.
5.	Employee	Using sound proof generator set	Avoid the noise environment
6.	Social	Resident of employee are planned at near factory	Reduced traffic Jam.

**1.11.1.7 Scheme of Response, Preparation, Training When the Factory Faces In Emergency Condition**

**URSP Mill** may face emergency condition due to nature, human and environment. At that time, life of human, properties of factory, productive resources such as raw, semi-product, finished product, machineries, etc., must be managed to the least loss and reformed the original in short time. Therefore, emergency plan must be compiled and followed up. The emergency plan for said factory and training program was stated at section 10.1.7.

**1.11.1.8 Parameters, Procedures, Time Schedule, Specified Place, Frequency and Approved Methods for Environmental Quality Monitoring**

Environmental quality monitoring is essential to decide the way of perfect direct to positive or negative impacts. In this section parameters, procedures, time schedule, specified place, frequency and approved methods for air, water, soil and noise on environment and employee were stated and details in section 10.1.8.

**1.11.1.9 Public Participation and Development**

There was the arrangement of the public participation at **Monitoring Working Committee** and **Monitoring Supervision Committee**, for the impacts of the production and distribution of pulp sheet by **URSP Mill**. The setting up these two committees was mentioned at 10.1 and 10.1.11. Moreover 2% of every year net profit should be expended as regional development fund as directed by government.

**1.11.1.10 Skill Development and Training Schedule**

There were total employee 130 persons serving at said factory. They service at office work, production, maintenance (electrical, mechanical), laboratory, security, skill ethic, unity of them make the factory improve. The former, experienced person directs the new one to improve skill. Skill development of employee causes the productivity, safe, pleasant in work place, life of machinery and last, adverse impacts on environment decrease. Therefore, the following training program was arranged.

<b>Sr. No.</b>	<b>Title of Training</b>	<b>Trainee</b>	<b>Trainer</b>	<b>Period</b>	<b>Month of Training</b>
1.	Laboratory skill	Person work at laboratory	Laboratory expert	3 days	October
2.	Maintenance skill	Maintenance department	Maintenance expert	3 days	January
3.	Production Skill	Production department	Production expert	3 days	April

In this section, 3 parts are as follows;

**- Setting up the organizations**

This organization should supervise the environment and social management plan team and all are in second party.

**- Scheme performed by environment and social management committee**

In this section, scheme performed by environment and social team to fulfill the aim of EMP was described.

**- Budget estimation for environment social monitoring, safe and health care, and reducing carbon**

Budget estimation for environment social monitoring, safe and health care, and reducing carbon was stated as 11,700,000 MMK and responsible person of this team stated also at Annex 1.

**1.11.2 Commitment by Nilar Pulp and Paper Mill (URSP Mill)**

The following commitments are conducted by responsible person of Environmental Management Plan Report.

1. The particulars in this report are correct and true;
2. This report has been written by following the relevant legislations of Ministry of Environmental Conservation and Forestry [Ministry of Natural Resources and Environmental Conservation] and these legislations in this report have been followed exactly;
3. The commitments, the impacts reducing procedure to the environment and the plans have been complied fully and always;
4. According to the improved technologies, approved Environmental Management Plan for current condition will be edited to fill by the instruction
5. If intended budget amounts of decommissioning, mitigation measures of current situation and environmental management plan are not sufficient in usage, extra allotment should be planned.
6. The laws, regulation, policies of state and facts under permits, certificates, and regulations are conducted.

**1.12. Conclusion and Appraisal**

**URSP Mill** produces pulp sheets and distributes to abroad. Dust and particulate matter are emitted by vehicles, generator sets, straw preparation, boiler stack and impact surrounding air. Wastewater was emitted to surrounding water by straw wash, machineries, tank wash, fiber wash, spillage, and boiler blow-down, reject water from water purification and back wash water. Solid waste as straw reject, rice husk and saw dust ash, packing materials of various raw materials were emitted to soil and noise by vehicles, generators,

and machineries, digesters, and boiler impact the surrounding and human. By the analysis data of air and wastewater such as particulate matter  $PM_{2.5}$ ,  $PM_{10}$  and noise level and COD, BOD, TSS and pH were out of range of standard values of *NEQ(E)G*. So, the requirements must be fulfilled in future with full strength by **URSP Mill**. The possible ways for mitigation measure of impacts are implemented by factory using Environmental Management Plan procedures and advance technology.

## **2.0 INTRODUCTION**

**Nilar Pulp and Paper Co., Ltd (URSP Mill)** is the factory which produces the pulp sheets by using the rice straw as a main raw material. The annual production capacity is about **1350** tons pulp sheets. The address of factory is No. 59, U Shwe Bin Street, Industrial Zone (1), Dagon Seikkan Township, Yangon Region, and Myanmar. Facts about factory and third party organization, composed this environmental management plan are mentioned in introduction section.

The said factory was established since 2003; all machineries were purchased and installed in local by Myanmar Professionals. Some complicated machineries were available as good second hand condition manufactured by abroad. Test run was performed in 2009 and commercial production in 2010. URSP Mill produces the rice straw pulp sheets by using rice straw as main raw material and digested with caustic soda solution in digester using steam. Cellulose fibers are separated by screening after digestion; washing; cleaning; size separation and pulp sheet making by pressing hot rollers. The pulp sheet comes out from roller as reel is cut into 30" × 20" size; packed and exported. Type of possession is company and investment is 182.89 million MMK and name of owner is Daw San Myint (Director) holds national registration card number 12/Pa Ba Ta (Citizen) 020072. Nilar Pulp and Paper Co., Ltd (URSP Mill) is situated at Dagon Seikkan Township and facts about social affairs are as follows;

Higher education	-	The National Youth Resource Development Degree College
Basic Education High Schools	-	3 Nos.
Basic Education Middle Schools	-	4 Nos.
Basic Education Primary Schools	-	11 Nos.
The Nursery School	-	1 No.
Monastery Education Schools	-	8 Nos.
The enrollment of school-age children	-	100%
The achievements of matriculation examination	-	23.09% in 2015-2016 28.20% in 2016-2017 29.159% in 2017-2018
The literacy percentage	-	100% (above the age of 15)

### ***Learning and studying supported classrooms opening***

The library opening	-	12 Nos.
B.E.H.S	-	4 Nos; already achieved by 3 PLT
B.E.M.S	-	3 Nos; already achieved by 3 PLT
	-	8 Nos; already achieved by 2 PLT
B.E.P.S	-	3 Nos; already achieved by 2 PLT





**Economical Facts**

There are two industrial zones (1) and (2); 75 industries in (1) and 28 industries in (2) also 211 cottage enterprises. The local net production was 195516.5 MMK in 2018.

**Cultural Facts**

There are no distinct pagodas, monasteries and monuments and other religion buildings or places.

**2.1 Salient Features of the Factory**

Name of Owner	Daw San Myint (Director)
Type of Possession	Company
Investment	182.89 Million MMK
National Registration Card Number	12/Pa Ba Ta (Citizen)020072
Address	No.59, U Shwe Bin Street, Industrial Zone (1), Dagon Seikkan Township, Yangon Region, Myanmar
Usage of Electricity	Marked Voltage 400/230 Volt Permitted Load 537H.P 800,000 kWh/year
Usage of Boiler	Horizontal Tube Boiler MaSa-5308 Permitted Pressure 13kg/cm <sup>2</sup> The height of chimney about 40feet Rice husk and saw dust are used as fuel. Annual fuel consumption is 2,800,000 kg.
Usage of Water	125,000 gallons per day and available from 6 inches tube well 2 nos. about 400 feet depth
Usage of Generators	400kVA + 310kVA + 160kVA Generators
The Responsible Person for Environmental Management Plan	U Tin Aung Moe Factory Manager 09-977212013
E-mail	ceooffice.ursp@nppcoltd.com
Date of submission for EMP Report Prepared on December 2018	2019 February 13 <sup>th</sup>

**2.2 Details of third party, prepared the Environmental Management Plan (EMP) report**

Company Name	Green Myanmar Environmental Services Co., Ltd.
Company Address	No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City, Yangon Region, Myanmar.
Company Registration Number	No. 2744/2012-2013 (Former) Company Registration No. 110299931
Contact Phone No.	09897978296
E-mail Address	<a href="mailto:gmescorporation@gmail.com">gmescorporation@gmail.com</a> , <a href="mailto:info@gmes-mm.com">info@gmes-mm.com</a>

**Table 2.1: Organization of GMES Team**

No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
1.	Team Leader	<ul style="list-style-type: none"> <li>Overall management of IEE/EMP operation</li> <li>Work plan</li> <li>Technical meeting and workshop</li> <li>Document reviewing and process flow studying</li> <li>Lead in facilitation of public consultation</li> <li>Data compilation &amp; analysis</li> <li>Coordination with stakeholders</li> </ul>	<p>U Kyaw Soe Win  Managing Director  Green Myanmar Environmental Services  Experience in EIA/IEE/EMP processing</p> <p>No.0019</p> <p>B.E (Chemical); B.Sc (Industrial Chemistry); OTS (81) Military Officer, Certificate of Industry and Environmental Protection for ASEAN-GHS; Certificate of Workshop on SME Innovation and Quality Management for Myanmar to Increase Productivity; P.E (from Myanmar Engineering Council); Certificate of Environmental and Social Impact Assessment; Certificate of ISO 14001:2015 Internal Auditor Training; Certificate of ISO 9001:2015 and High Level Structure Awareness Training</p>

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No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
2.	Consultant on Air Quality Management	<ul style="list-style-type: none"> <li>▪ Give advice on collecting field data for air quality and assist on air quality control system</li> <li>▪ Give advice on air pollution evaluate and mitigation</li> <li>▪ Give advice for data processing, and report preparation</li> </ul>	<p>U Sein Thauung Oo Chairman Green Myanmar Environmental Services Professional Engineer No.0023</p> <p>B.E (Chemical); B.Sc (Industrial Chemistry); Certificate of Industry and Environmental Protection for ASEAN; Certificate of the AMEICC Program on SME Management Consulting System for COEs-Intermediate (AMSM-2); Certificate of Environmental Protection through Pollution Prevention Approach; Certificate of Industry and Environmental Protection for ASEAN-GHS Practical Skills (ENEP-2); Certificate of Meeting the Challenges of Sugar Crops and Integrated Industries in Developing Countries; Certificate of New York Sugar Conference; Certificate of Processing and Marketing Soybeans for Meat, Dairy, Baking and Snack Application; Certificate of Seminar in Soy Flour Procurement; P.E (from Myanmar Engineering Council); Certificate of Program Evaluators Training Workshop (Mar, 2015); Certificate of Program Evaluators Training Workshop (Oct, 2015); Certificate of Myanmar Engineering Council Accreditation Course</p>
3.	Environmental Consultant	<ul style="list-style-type: none"> <li>▪ Advise on the design of IEE/EMP</li> <li>▪ Develop term of reference for duty and responsibility among IEE/EMP team</li> <li>▪ Advise on the environmental baseline</li> <li>▪ Advise on the field survey</li> <li>▪ Facilitate technical analysis</li> <li>▪ Streamline the Environmental Management Plan</li> </ul>	<p>Engr. Daw Khin Swe Aye Former Lecturer, Department of Chemical Engineering, Rangoon Institute of Technology No.0021</p> <p>B.E (Chemical); M.Phil (Chemical); Diploma of Associate ship London School of Polymer Technology (ALSPT) Grad. PRI</p>



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No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
4.	Specialist on Waste Management	<ul style="list-style-type: none"> <li>Collecting field data for industrial and municipal waste</li> <li>Assist in Laboratory Testing</li> <li>Data processing, computing, projection, modeling and analysis</li> <li>Assist in report preparation</li> </ul>	<p>Engr. Daw Tin May Soe Retired Professor and Head, Department of Chemical Engineering, MTU. Experience in Environmental Toxicology and Pollution Control</p> <p>No.0028</p> <p>M.E (Chemical); B.E (Chemical); Certificate of the Second International Course on Food Technology; Certificate of Training Course on Environmental Toxicology: Pollution Control and Management; P.E (Chemical)</p>
5.	Consultant for Laboratory Analysis	<ul style="list-style-type: none"> <li>Advise on data processing and laboratory testing and prepare instruction for laboratory testing</li> <li>Check the result of environmental laboratory testing</li> <li>Compare the laboratory result and verification</li> </ul>	<p>U Myo Myint Former Factory Manager, Ministry of Industry (1)</p> <p>No.0026</p> <p>B.E (Chemical); B.Sc (Industrial Chemistry)</p>
6.	Consultant on Environmental Quality Management	<ul style="list-style-type: none"> <li>Assist in preparation of guideline for environmental sampling of air and water quality</li> <li>Register and inspect the sample collected</li> <li>Assist in report preparation for environmental baseline</li> </ul>	<p>Engr. Daw Khin Shwe Htay Former Lecturer, Chemical Engineering Department, Yangon Technological University. (Environmental Engineer)</p> <p>No.0022</p> <p>B.E (Chemical); M.E (Chemical); M.Sc (Env. Eng)</p>
7.	Environmental Consultant	<ul style="list-style-type: none"> <li>Advise on the design of IEE</li> <li>Develop terms of reference for duty and responsibility among IEE/EMP team</li> <li>Advise on the environmental baseline</li> <li>Advise on the field survey</li> </ul>	<p>Engr. U Maung Maung Aye Construction Coordinator Badamyar Topside Construction, Total E&amp;P Myanmar</p>



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No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
8.	Social Operation and Field Coordinator	<ul style="list-style-type: none"> <li>Develop operational checklist for social survey</li> <li>Facilitate technical meeting and record keeping</li> <li>Assist in data mining and secondary data collection and coordinate with local authority and communities for village level meeting</li> </ul>	<p>U Khin Aung General Manager, Green Myanmar Environmental Services  No.0025  B.E (Chemical); M.B.A</p>
9.	Field Supervisor	<ul style="list-style-type: none"> <li>Develop operational checklist for environmental study</li> <li>In charge for preliminary field visit</li> <li>Establish field operational office for field survey</li> <li>Supervise field survey</li> <li>Finalize checking for report and report formatting</li> </ul>	<p>U Kyi Han Bo B.E (Aerospace Fuel and Propellant Engineer)  Quality Engineer</p>
10.	Junior Environmental Expert	<ul style="list-style-type: none"> <li>Data collection</li> <li>Document reviewing</li> <li>Process studying</li> <li>Preparation of impact evaluation and assessment, and management plan</li> <li>Report preparing and formatting</li> </ul>	<p>U Myo Min Htun B.Sc (Physis)  Daw Aye Thuzar Hein B.E (Chemical)  Daw Hnin Htet Htet Hlaing B.E (Port and Harbor)  Daw Wai Wai Mon B.E (Port and Harbor)</p>



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No.	Title of Post	Terms of Reference	Nominee, Organization & Transitional Consultant Registration Number
11.	Environmental Monitoring Team	<ul style="list-style-type: none"> <li>Environmental baseline measuring</li> <li>Data analysis</li> <li>Coordinate for public consultation meeting</li> <li>Environmental baseline report preparing and formatting</li> </ul>	<p>U Pyae Phyo Kyaw B.Sc (Forestry) (Monitoring Team Leader)</p> <p>U Myo Thet Naung B.E (Aerospace Fuel and Propellant Engineer) (Assistant Team Leader)</p> <p>U Aung Ko Min B.E (Chemical) (Monitoring Technician)</p> <p>U Thet Ko Zin B.E (Chemical) (Monitoring Technician)</p> <p>U Thiha Zaw (Assistant Monitoring Technician)</p>
12.	Public Coordinator	<ul style="list-style-type: none"> <li>Assist in stakeholder meeting</li> <li>Assist in public consultation meeting</li> <li>Preparation for public consultation meeting</li> </ul>	<p>U Aung Kyaw Than B.E (Chemical)</p>
13.	Laboratory Analysis Team	<ul style="list-style-type: none"> <li>Water sampling and laboratory testing</li> <li>Preparation for water and wastewater sampling</li> <li>Preparation for laboratory testing</li> <li>Laboratory testing</li> <li>Reporting for laboratory result</li> </ul>	<p>Daw Cherry Twin B.E (Chemical) (Laboratory Head)</p> <p>Daw Wint Phyu Htway B.E (Chemical) (Senior Assistant Engineer)</p> <p>U Thet Min Paing B.E (Chemical) (Junior Assistant Engineer)</p>





ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်  
Certificate of Incorporation

စိမ်းလန်းမြန်မာ ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်  
GREEN MYANMAR ENVIRONMENTAL SERVICES COMPANY LIMITED  
Company Registration No. 110299931

မြန်မာနိုင်ငံကုမ္ပဏီများအက်ဥပဒေ ၁၉၁၄ ခုနှစ် အရ  
စိမ်းလန်းမြန်မာ ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှု ကုမ္ပဏီလီမိတက်  
အား ၂၀၁၂ ခုနှစ် အောက်တိုဘာလ ၃ ရက်နေ့တွင်  
အစုရှယ်ယာအားဖြင့် တာဝန်ကန့်သတ်ထား သည့် အများနှင့်မသက်ဆိုင်သောကုမ္ပဏီ  
အဖြစ် ဖွဲ့စည်းမှတ်ပုံတင်ခွင့် ပြုလိုက်သည်။

This is to certify that  
GREEN MYANMAR ENVIRONMENTAL SERVICES COMPANY LIMITED  
was incorporated under the Myanmar Companies Act 1914 on 3 October  
2012 as a Private Company Limited by Shares.



ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ  
Registrar of Companies  
ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန  
Directorate of Investment and Company Administration

Former Registration No. 2744/2012-2013





REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation  
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION  
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No.

0006

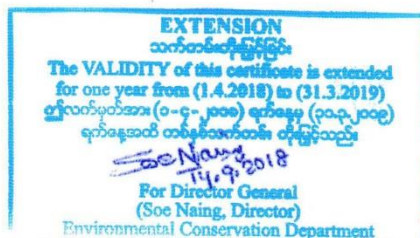
Date

01 JUL 2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

- |   |  |
|---|--|
| (a) Name of Organization<br>(အဖွဲ့အစည်းအမည်)  | Green Myanmar Environmental Services Co., Ltd.   |
| (b) Name of the representative in the organization<br>(အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်)  | Engr. U Sein Thauung Oo  |
| (c) Citizenship of the representative in the organization<br>(အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား)   | Myanmar  |
| (d) Identity Card /Passport Number of the representative person in the organization<br>(အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/ Ma Ya Ka (N) 082871  |
| (e) Address of organization<br>(ဆက်သွယ်ရန်လိပ်စာ)   | 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon.<br><a href="mailto:gmescompany@gmail.com">gmescompany@gmail.com</a> , 09 5122448 |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)  | Organization   |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)  | 31 March 2018  |



*[Signature]*

Director General

Environmental Conservation Department

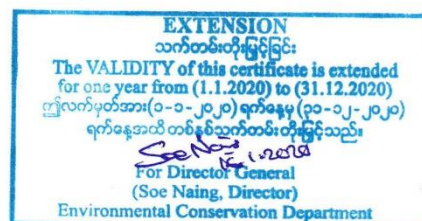
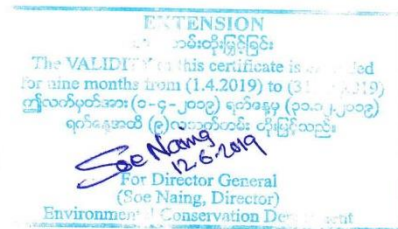
Ministry of Natural Resources and Environmental Conservation





Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Facilitation of meeting
3. Meteorology, Modeling for Air Quality
4. Risk Assessment and Hazard Management
5. Socio-Economy
6. Water Pollution Control
7. Waste Management
8. Chemical Engineering Plant Design
9. Chemical Engineering Process Design
10. Chemical Engineering, Laboratory Analysis for  
water and waste water
11. Environmental Management
12. Industrial Management





REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

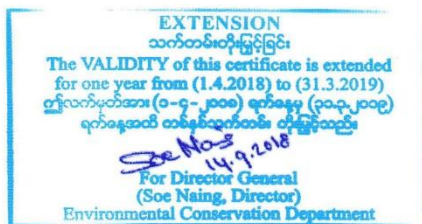


No. 0023 Date 17.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- |  |  |
|--|--|
| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                           | Engr. U Sein Thaung Oo   |
| (b) Citizenship<br>(နိုင်ငံသား)  | Myanmar  |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်) | 12/ Ma Ya Ka (N) 082871  |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)  | No. 17/D, Aung Theikdi Yeik Thar, Mayangone Township, Yangon.<br><a href="mailto:gmescompany@gmail.com">gmescompany@gmail.com</a> , <a href="mailto:seinthaungoo@gmail.com">seinthaungoo@gmail.com</a><br>09 5122448 |
| (e) Organization<br>(အဖွဲ့အစည်း)   | Green Myanmar Environmental Services Co.,Ltd.  |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                 | Person   |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                           | 31 March 2018  |



*Handwritten signature*

Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control

2. Chemical Engineering Process Design, Industrial Management

EXTENSION  
သက်တမ်းတိုးမြှင့်ခြင်း  
The VALIDITY of this certificate is extended  
for nine months from (1.4.2019) to (31.12.2019)  
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉)  
ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။  
*Soe Naing* 12.6.2019  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department

EXTENSION  
သက်တမ်းတိုးမြှင့်ခြင်း  
The VALIDITY of this certificate is extended  
for one year from (1.1.2020) to (31.12.2020)  
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀)  
ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။  
*Soe Naing* 16.1.2020  
For Director General  
(Soe Naing, Director)  
Environmental Conservation Department



REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation  
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION  
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

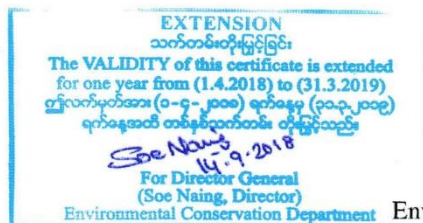


No. 0019 Date 07 JUL 2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- |   |  |
|---|--|
| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                            | Engr. U Kyaw Soe Win   |
| (b) Citizenship<br>(နိုင်ငံသား)   | Myanmar  |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/ Ou Ka Ta (Naing) 038453  |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)   | No. 135, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone(1), Hlaing Thar Yar Township, Yangon<br><a href="mailto:gmescompany@gmail.com">gmescompany@gmail.com</a><br><a href="mailto:ksw1963@gmail.com">ksw1963@gmail.com</a> , 09 5081451 |
| (e) Organization<br>(အဖွဲ့အစည်း)  | Green Myanmar Environmental Services Company Limited   |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                  | Person   |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                            | 31 March 2018  |



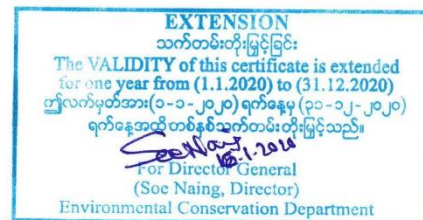
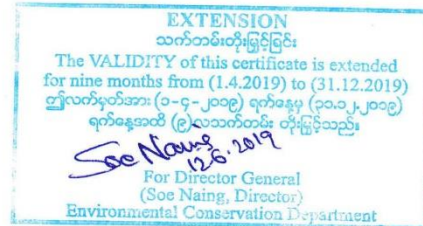
Director General

Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting

② Industrial Management







REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

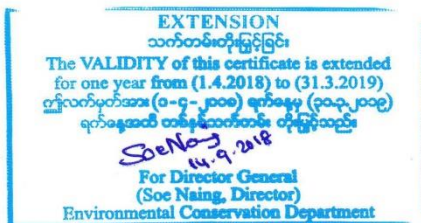


No. 10026 Date 01.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- |  |  |
|--|--|
| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                           | U Myo Myint  |
| (b) Citizenship<br>(နိုင်ငံသား)  | Myanmar  |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်) | 12/ Pa Ba Ta (N) 015315  |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)  | 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon.<br><a href="mailto:gmescompany@gmail.com">gmescompany@gmail.com</a> , 09 2012723 |
| (e) Organization<br>(အဖွဲ့အစည်း)   | Green Myanmar Environmental Services Co.,Ltd.  |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                 | Person   |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                           | 31 March 2018  |

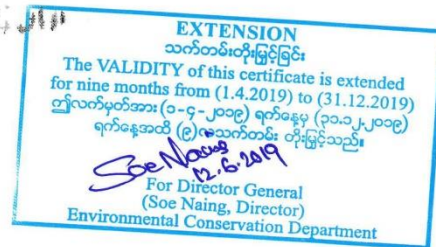


Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Chemical Engineering, Laboratory Analysis for Water and Wastewater





REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation  
CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION



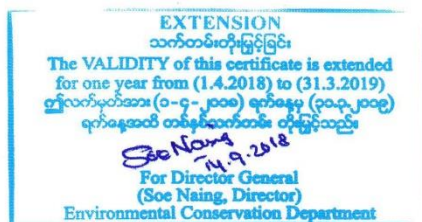
(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

No. 10021 Date 11.03.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- |   |  |
|---|--|
| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                            | Engr. Daw Khin Swe Aye   |
| (b) Citizenship<br>(နိုင်ငံသား)   | Myanmar  |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/Sa Kha Na (N) 017708  |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)   | 14 B, Wai Lu Wun Main Street, Sanchaung,<br>Yangon.<br><a href="mailto:khinsweaye.daw@gmail.com">khinsweaye.daw@gmail.com</a> , 09 5015475 |
| (e) Organization<br>(အဖွဲ့အစည်း)  | Green Myanmar Environmental Services Co.,Ltd.  |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                  | Person   |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                            | 31 March 2018  |



*[Signature]*

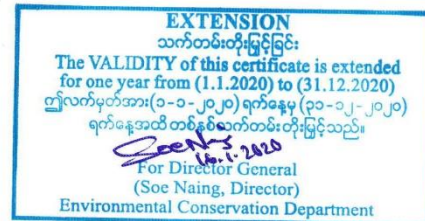
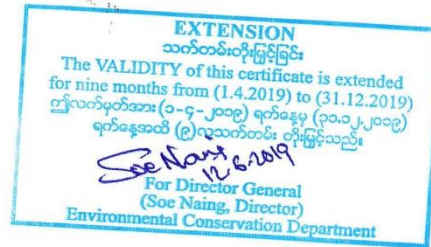
Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control

2. Waste Management





REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)

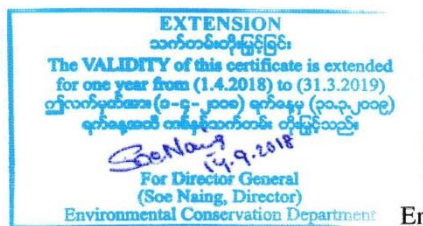


No. 10028 Date 11 JUL 2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

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| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                            | Prof. Engr. Daw Tin May Soe  |
| (b) Citizenship<br>(နိုင်ငံသား)   | Myanmar  |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/ Ka Ma Ya (N) 016072  |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)   | 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon.<br><a href="mailto:tinmaysoe949@gmail.com">tinmaysoe949@gmail.com</a> , 09 5077081 |
| (e) Organization<br>(အဖွဲ့အစည်း)  | Green Myanmar Environmental Services Co., Ltd.   |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                  | Person   |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                            | 31 March 2018  |



14.9.2018

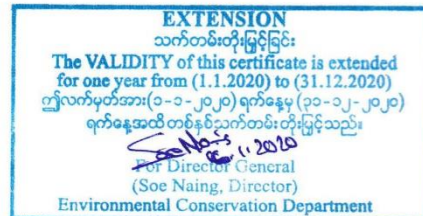
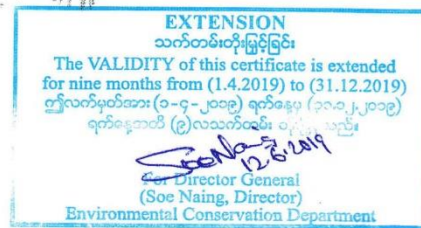
Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Water Pollution Control

2. Chemical Engineering Process Design





REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation



CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

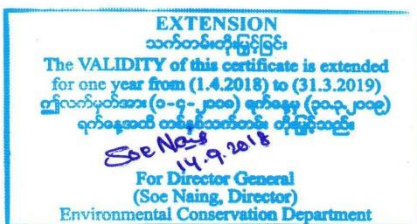
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No. 0025 Date 14.9.2018

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

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|--|---|
| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                           | U Khin Aung   |
| (b) Citizenship<br>(နိုင်ငံသား)  | Myanmar   |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ်အမှတ်) | 12/ Ma Ya Ka (N) 047032   |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)  | 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon.<br><a href="mailto:khinaung1@gmail.com">khinaung1@gmail.com</a> , 09 43066741 |
| (e) Organization<br>(အဖွဲ့အစည်း)   | Green Myanmar Environmental Services Co.,Ltd.   |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                 | Person  |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                           | 31 March 2018   |



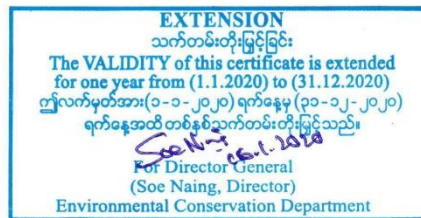
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Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Socio-Economy







REPUBLIC OF THE UNION OF MYANMAR  
Ministry of Natural Resources and Environmental Conservation



CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

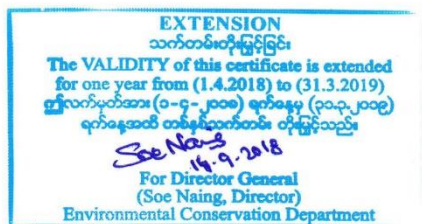
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No. 10022 Date 11.11.2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the person under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို လူပုဂ္ဂိုလ်အားထုတ်ပေးလိုက်သည်။)

- |   |   |
|---|---|
| (a) Name of Consultant<br>(အကြံပေးပုဂ္ဂိုလ်အမည်)                            | Daw Khin Shwe Htay  |
| (b) Citizenship<br>(နိုင်ငံသား)   | Myanmar   |
| (c) Identity Card / Passport Number<br>(မှတ်ပုံတင်/နိုင်ငံကူးလက်မှတ် အမှတ်) | 12/ Tha Ga Ka (N) 008808  |
| (d) Address<br>(ဆက်သွယ်ရန်လိပ်စာ)   | No. 115, Kanaung Min Thargyi Road, Hlaing Thar Yar Industrial City, Zone (1), Hlaing Thar Yar Township, Yangon<br><a href="mailto:shwehtay.khin@gmail.com">shwehtay.khin@gmail.com</a> , 09 5032910 |
| (e) Organization<br>(အဖွဲ့အစည်း)  | Green Myanmar Environmental Services Co.,Ltd.   |
| (f) Type of Consultancy<br>(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)                  | Person  |
| (g) Duration of validity<br>(သက်တမ်းကုန်ဆုံးရက်)                            | 31 March 2018   |



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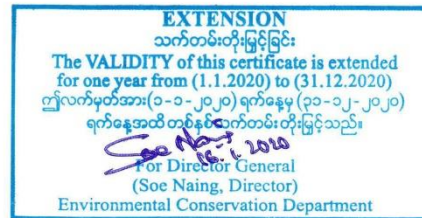
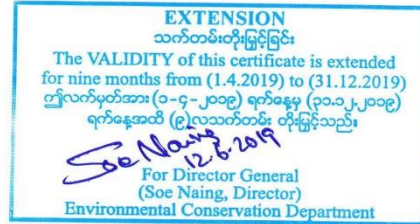
Director General  
Environmental Conservation Department  
Ministry of Natural Resources and Environmental Conservation



Areas of Expertise Permitted  
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Water Pollution Control

2. Waste Management



### 3.0 POLICIES, LEGAL AND THE INSTITUTIONAL FRAMEWORKS

In this section, there are four parts as followed and they are:

- 3.1 Policies, legal and the institutional frameworks of **Nilar Pulp and Paper Co., Ltd (URSP Mill)**, concerning the products
- 3.2 The laws suggested by Environmental Conservation Department to fulfil in additional upon the Environmental Management Plan Report prepared at December, 2018
- 3.3 Institutional frameworks of Myanmar Government concerning the relevant policies, the legislation and institutional frameworks, environmental quality guideline value standards
- 3.4 International Convention, Treaties and agreements by Myanmar Government

#### 3.1 Policies, Legal and the Institutional Frameworks of Nilar Pulp and Paper Co., Ltd (URSP Mill), Concerning the Products

**URSP Mill** produces the straw pulp sheets by using rice straw as the main raw material. Caustic soda, the chemicals for laboratory, diesel, petrol, hydraulic oil, various lubricants, saw dusts and rice husks are also used as the indirect raw materials.

Moreover, human resources, motor vehicles and expressed way are related with the manufacturing and distribution of said factory. There are also concerning the waste disposal, noise and vibration on environment. The environmental and social related laws applicable to the operation of the said factory are as follow:

##### 3.1.1 Constitution of Republic of the Union of Myanmar (2008)

The Republic of the Union of Myanmar enacts this law in 2008 and it concerns all citizens in Myanmar. In this law, **Chapter VIII Citizen, Fundamental Rights and Duties of the Citizen: Rule 345** – Citizenship; **Rule 347** – Enjoyment for equal rights; **Rule 348, 349** – No Discrimination on race, birth, religion, etc., and equal opportunity on public employment, occupation, etc., and no one are concerned to all person in project and must comply. There are also duties of citizen such as **Rule 383** – non-disintegration of the Union, national solidarity, perpetuation of sovereignty; **Rule 384** – to abide by the provisions of this constitution; **Rule 385** – to safeguard independence, sovereignty and territorial integrity of the Republic of the Union of Myanmar; **Rule 386** – to undergo military training; **Rule 387** – to enhance unity among national races and to ensure public peace and stability; **Rule 388** – for the emergence of a modern developed Nation; **Rule 389** – to pay taxes; **Rule 390** – to assist the preservation and safeguarding of cultural heritage, environmental conservation, striving for development of human resources,



protection and preservation of public property are complied by all persons in project.

### **3.1.2 The Conservation of Water Resources and River Law**

The State and Development Council enacts the law as The State Peace and Development Council Law No. 8/2006 dated 2<sup>nd</sup> October, 2006. In this law, **Chapter II Aims: Rule 3** as to conserve and protect the water resources and rivers system for beneficial utilization by the public; to smooth and safety waterways navigation along rivers and creeks; to contribute to the development of State economy through improving water resources and river system; to prevent environmental impacts; **Chapter V Prohibitions: Rule 8** – no person shall carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks; cause the wastage of water resources wilfully; **Rule 9** – no person shall destroy, cause damage or cause collision of vessel with the river training structure either wholly or partly; **Rule 10** – no person shall anchor the vessels where vessels are prohibited from anchoring in the rivers and creeks; **Rule 11** – no person shall dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessels which has berthed, anchored, stranded or sunk; catch aquatic creatures within river-creek boundary, bank boundary or waterfront boundary with poisonous materials or explosives; dispose of disposal soil and other materials from panning for gold, gold mineral dredging or resource production in the river and creek, into the river and creek or into the water outlet gully which can flow into the river and creek, etc.; are complied by project person.

### **3.1.3 The Underground Water Act, 21<sup>st</sup> June, 1930 Dated [Burma Act IV]**

In this Act, **Rule 3** – no person shall sink a tube for the purpose of obtaining underground water except under and in accordance with the terms of a license granted by the water officer; every person owning a tube which was in existence before the extension of this Act to the local area concerned shall apply to the water officer for a license for the said tube, and such license shall be granted free of charge; **Rule 4** – power to close unlicensed tubes; **Rule 5** – Supplying of information; **Rule 7** – penalty are complied by person of said project.

### **3.1.4 Prevention of Hazard from Chemical and Related Substances Law (2013)**

The Pyidaungsu Hluttaw enacts this law on 26<sup>th</sup> August 2013 as 2013 Pyidaungsu Hluttaw Law No. 28.

In this law, **Chapter II Aims: Rule 3** – the Aims of this law are as follow: (a) to protect from being damaged the natural environment resources and being hazardous any living beings by chemical and related substances; (b) to supervise systematically in performing the chemical and related substances business with permission for being safety; (c) to perform the system of obtaining information and to perform widely educative and research for using the chemical and related substance systematically; (d) to perform the sustainable development for the

occupational safety, health and environmental conservation; **Chapter VII License Permitted for the Chemical and Related Substances Businesses:****Rule 13** – a person who wants to operate the chemical and related substances business shall apply to obtain a license together with the management working plan relating to the environmental conservation to the Central Supervisory Board in accordance with the stipulations; **Rule 15** – a person who has obtained a license, before starting the respective chemical and related substances business: (a) shall be inspected for the safety and the power of resistance of the machinery and equipment by the respective Supervisory Board and Board of Inspection; (b) shall be attended the person who serve in the work to the respective foreign trainings or the trainings and the expert trainings on prevention of hazard from the chemical and the related substances opened by the government department and the government organizations; **Rule 16** – a person who has obtained a license: (a) shall abide the license regulations; (b) shall perform to abide strictly the instructions for being safety in using the chemical and related substances by himself and also the persons who serve the work; (c) shall keep the required safety equipment enough in the chemical and related substances businesses, furthermore shall grant the personal protection equipment and dresses free of charge to the working persons; (d) shall make the course of training and study and instruction if necessary to the working persons for using the occupational safety equipment, the personal protection equipment and the dresses systematically in the chemical and related substances businesses; (e) shall be inspected by the respective Supervisory Board and Boards of Inspection in respect of whether or not the hazard may impact on the Human Being and Animals' health and the environment; (f) shall make medical check-up the working persons who will work in the chemical and related substances business and shall permit to serve in that work after obtaining the recommendation that his health is suitable for that work and this medical check-up records shall be kept systematically; (g) shall send the copy of informative letter of the permission to the respective Department of Township Administration, if the hazardous chemical or related substances are permitted to store; (h) shall acquire in advance the guidance and agreement of the respective Department of Fire Brigade, if the business that is worried to fire hazard is operated by using the fire hazard substances or the explosive substances; (i) shall transport only the permitted amount of the chemical and related substances in accordance with the prescriptive stipulations, if they are transported in local; (j) shall take the permission from the Central Supervisory Board if the chemical and the related substance is altered and transferred from one place to any other place which contained in the license; (k) shall abide and perform in accordance with the related environmental laws not to impact and damage to the environment in operating the chemical and related substances business; **Rule 17** – a person who has obtained a license, shall put the insurance in accordance with the prescriptive stipulations to be able to pay the compensation, if the impact and damage is occurred on the Human Being and Animals or the environment in respect of the chemical and related substances businesses; **Rule 18** – a person who has obtained a license, shall apply to

extend the duration of license, (30) days in advance before the date of expiry to the Central Supervisory Board in accordance with the stipulations are complied by person of said project. **Chapter VIII Registration Certificate: Rule 20, 22, 23, 24** are license applying, abiding the regulations consisted in the registration certificate, registering additional chemicals, informing the unused chemical, extending the about to expired certificate are complied by people in project. **Chapter IX Hazard Control and Decrease: Rule 27** – such as classifying the hazard level, expressing Material Safety Data Sheet and Pictogram, providing the safety equipment, the personal protection equipment, performing in accordance with the stipulations, not being imported or exported the chemicals, equipment machinery are complied by people.

### **3.1.5 The Prevention of Hazard from Chemical and Related Substances Rules**

Ministry of Industry enacts this law as Notification No. (85/2015-2016) dated 12<sup>th</sup> January, 2016. In this rules, **Chapter IV Application and Issue of License and Recommendation: Rule 17** – applying the license for the business filling Form (1); **Rule 19** – applying again for not included in license; **Rule 22** – applying Form (13) for trading; **Chapter V Facts which shall be abided by a License Holder: Rule 24** – operating only permitted substances in license, license duration, paying fees for renewal, not making the incorrect advertising and selling, hanging the license at a conspicuous place, hanging the certificates and recommendation letters for employees awareness, hanging distinctly caution letter or pictogram for hazard information, storing them at the place and types of building prescribed and allowed by the Central Supervisory Board, carrying out the safety measures, packing them and sticking of pictogram in accordance with the stipulations, carrying out safety measures for them, equipment and machineries used in the occupational area, instructing the maximum contact amounts, making practice for emergency situations, doing regular medical check-up the working people, making the special treatment after being medical check-up, allowing the doctor to inspect place, health conditions, abiding the existing laws, allowing the Boards of Inspection, provisions related fire safety are complied by project person. **Chapter XII Facts which shall be abided by and performed to Prevent and Decrease from the Accident: Rule 56** – the license holder shall provide the following equipment and materials such as Respirator, Fire safety equipment, Laboratory coats and dresses used in the occupational area, Goggles, Face shields, Safety boots, Gloves, Other necessary hazard protection materials according to the business condition; **Rule 57** – supervision and instructing as necessary for safety; **Rule 58** – managing to prevent and decrease the accident; **Chapter XIII Facts which shall be abided by Transporting: Rule 59** – having the transportation license, getting the recommendation letter, carrying out by coordination and supervision, etc.; **Rule 60** – using PPE, reporting and submitting the report to the Board of Inspection immediately after cleaning the accidental place quickly to be free from hazard are complied by person. **Chapter XIV Facts which shall be abided by Storing: Rule**

**61; Chapter XV Facts which shall be abided by Using: Rule 62; Chapter XVI Facts which shall be abided by Discharging: Rule 63; Chapter XVII Facts which shall be abided by in the Laboratory: Rule 65; Chapter XVIII Abiding by the International Agreements Relevant with Chemical and Related Substances: Rule 66, 67, 68** are complied by project person.

### 3.1.6 Electricity Law

Pyidaungsu Hluttaw enacts this law as 2014 Pyidaungsu Hluttaw Law No. 44/2014 dated 27<sup>th</sup> October, 2014. In this law, **Chapter 5 Right to engage in electricity-related work: Rule 11** – applying to allow the respective electricity-related work; **Chapter 12 Prohibitions: Rule 35** – no one shall be engage in electricity-related work without having obtained a license from the relevant government department or organization; **Rule 36** – no license holder shall engage in any work except the work contained in the license; **Rule 37** – no one shall perform electrical installations and repairs without having an electrical aptitude certificate; **Rule 38** – no one shall engage in electrical power generation, transmission, connection or use without having an electrical safety certificate; **Rule 39** – no one shall engage in the import, domestic production, export, distribution or sale of electrical appliances which do not conform to the norms stipulated by the relevant ministry; **Rule 40** – no holder of a license to engage in electricity-related work shall perform the work jointly with, or transfer it to, someone else without the permission of the relevant department or organization; **Rule 41** – no holder of a license to engage in electricity-related work shall sell, mortgage, lease, exchange, or use any other method to transfer the license or the whole work for which the license was granted or any part thereof without the permission of the relevant government department or organization which issued the license; **Rule 42** – no one shall construct anything, grow trees, or engage in other inopportune activities within the electrical power line area; **Rule 43** – no one shall, without the permission of the holder of the license to engage in electricity-related work, obtain electric power through a connection to the line, or waste or use electric power; **Rule 44** – no one shall divert electric power, cut off a power line or destroy any electrical apparatus used an electricity-related work; **Chapter 13 Offences and penalties: Rule 45** – anyone convicted of having violated the prohibition under section 35 shall be punished with a fine from minimum kyats 100,000 to maximum kyats 500,00, if after having been punished in this way, he is convicted of having continued to commit the offence, he shall additionally be punished with imprisonment from minimum 1 year to maximum 3 years; **Rule 46** – any holder of a license to engage in electricity-related work convicted of having violated the prohibition under section 36 shall be punished with a fine from minimum kyats 100,000 to maximum kyats 500,000, if, after having been punished in this way, he is convicted of having continued to commit the offence, he shall additionally be punished with imprisonment from minimum 1 year to maximum 3 years; **Rule 47** – anyone convicted of having violated the prohibition under section 37 shall be punished with

a fine from minimum kyats 50,000 to maximum kyats 300,000; **Rule 48** – anyone convicted of having violated the prohibitions under section 38 shall be punished with a fine from minimum kyats 300,000 to maximum kyats 1,000,000; **Rule 49** – anyone convicted of having violated the prohibitions under section 39 shall be punished with imprisonment of minimum 1 year to maximum 3 years and with a fine of minimum kyats 3,000,000, the property relating to the offence shall be confiscated as state property and destroyed; **Rule 50** – any holder of a license to engage in electricity-related work convicted of having violated the prohibitions under section 40 shall be punished with a fine of minimum kyats 100,000 to maximum kyats 500,000, if, after having been punished in this way, he is convicted of having continued to commit the offence, he shall additionally be punished with imprisonment from minimum 1 year to maximum 3 years; **Rule 51** – any holder of a license to engage in electricity-related work convicted of having violated the prohibitions under section 41 shall be punished with a fine of minimum kyats 100,000 to maximum kyats 500,000; **Rule 52** – anyone convicted of having violated any prohibitions under section 42 shall be punished with imprisonment of up to 3 years and with a fine of up to kyats 1,000,000; **Rule 53** – be punished with imprisonment of up to 3 years and with a fine of up to kyats 1,000,000; **Rule 54** – anyone convicted of having violated the prohibitions under section 44 shall be punished with imprisonment of minimum 5 years to maximum 10 years and with a fine of minimum kyats 100,000 to maximum kyats 1,000,000; **Rule 55** – anyone convicted of having abetted or aided to violated any prohibitions under sections 35 to 44 shall be punished as if he had committed the offence are complied by person of project.

### **3.1.7 The Private Industrial Enterprise Law**

The State Law and Order Restoration Council enact this law as the State Law and Order Restoration Council Law No. 22/90 dated 26<sup>th</sup> November, 1990. In this law, **Chapter III Registration of Private Industrial Enterprises: Rule 4** – (a) any person desirous of conducting any private industrial enterprise, (b) any person conducting any private industrial enterprise on the day this Law is enacted; **Rule 5** – in applying for registration under Section 4, application shall be submitted to the respective State or Divisional Officer-in-charge in the prescribed manner; **Chapter VI Duties and Rights of the Entrepreneur: Rule 13** – the duties of the entrepreneur are as follows:- (a) shall pay the registration fees, fees for the renewal of registration and other payable duties and taxes prescribed by the Directorate, (b) shall abide by the terms and conditions of the registration certificate, (c) shall conduct the enterprise by opening an account with the relevant bank in the name of its registered enterprise, (d) shall maintain systematically and fully as prescribed by the Directorate, the statement of accounts relating to the registered private industrial enterprise and shall submit the same to the relevant Government department, organization or Supervisory Body when required to do so, (e) shall submit to the inspection of the person or inspection body assigned by the Directorate or

Supervisory Body, (f) shall shift the place of enterprise, change the nature of enterprise, amalgamate enterprises and split up enterprises only with the approval of the Directorate, (g) shall abide by the orders and directives issued from time to time by the Ministry and the Directorate, (h) shall also abide by the existing laws; **Rule 14** – the entrepreneur has the right to apply for the following requirements from the relevant Government departments and Government organizations:- (a) land, water, power, communication and transport et cetera required for use in his enterprise, (b) exemptions and reliefs from taxes, (c) loans for fixed capital and working capital, (d) raw materials, machinery and spare parts required locally and from abroad for his enterprise, (e) local and foreign technical know-how for enhanced production goods and for improvement in the quality of finished goods, **Rule 15** – the entrepreneur has the right to carry out the followings:- (a) appointing foreign exports and technicians with the approval of the Ministry, (b) carrying out change of the name of enterprise, transfer of ownership, temporary suspension or permanent closing down of the enterprise in the manner prescribed and with the approval of the Directorate; **Chapter XII Prohibitions: Rule 26** – no one shall conduct a private industrial enterprise contained in section ~ without obtaining registration under this Law, **Rule 27** – an entrepreneur: (a) in distributing and selling the goods he has produced shall not sell without a trade mark, (b) shall not violate any provision of section 13, (c) shall not fail to comply with any order or decision passed by the Minister and the Director General; **Chapter XIII Offence and Penalty: Rule 28** – whoever violates the provision of section 26 shall, on conviction:- (a) in the case of conducting a small scale private industrial enterprise, he punished with fine which may extend from a minimum of kyats 5,000 to a maximum of kyats 10,000, (b) in the case of conducting a medium scale private industrial enterprise, he punished with fine which may extend from a minimum of kyats 10,000 to a maximum of kyats 20,000, (c) in the case of conducting a large scale private industrial enterprise, he punished with fine which may extend from a minimum of kyats 20,000 to a maximum of kyats 50,000; **Rule 30** – if the Director General discovers that the entrepreneur has violated any provision of section 27, the Director General may pass any of the following administrative penalties are known and conducted.

### **3.1.8 The Export and Import Law**

The Pyidaungsu Hluttaw enacts this law as The Pyidaungsu Hluttaw Law No. 17/2012 dated 17<sup>th</sup> September, 2012. In this law, **Chapter IV Prohibitions: Rule 5** – no person shall export or import restricted, prohibited and banned goods; **Rule 6** – without obtaining license, no person shall export or import the specified goods which is to obtain permission; **Rule 7** – a person who obtained any license shall not violated the conditions contained in the license; **Chapter V Offences and Penalties: Rule 8** – whoever violates the prohibition contained in section 5 or section 6, on conviction, shall be punished with imprisonment for a term not exceeding three years or with fine or with both; **Rule 9** – a person who obtained any permit violates the prohibition contained in section 7, on conviction, shall be

punished with imprisonment for a term not exceeding three years or with fine or with both; **Rule 10** – a person attempts to commit or abets in the commission of any offence contained in this Law shall be punished in the same manner as if he had been committed such offence and the exhibits shall also be confiscated are known and conducted by person of project.

### **3.1.9 Factory Act, 1951**

Factory Act 1951 is enacted in Burma Gazette as 1951 Act 65 dated 1<sup>st</sup> January, 1952.

In this act, Factory owner reports the facts about the factory such as name, address, type of product, process, etc., before start the work or using the building, time duration of reports, report for rerunning, report for new manager; owner or manager when necessary; reporting the stoppage and are known and conducted by person of project.

**Chapter 3 Health: Rule 13** – states that every factory, every factory compound must be cleaned and especially drainage, lavatory and then off-smell places and floor of every workplace was washed once a week at least, painting (once 3 years); **Rule 14, 15** – ventilation; **Rule 16** – fumes and dust; **Rule 17** – humidification; **Rule 18** – crowding in workplace; **Rule 19** – lighting; **Rule 20** – drinking water; **Rule 21** – lavatories; **Rule 22** – spittoon; **Chapter 4 Dangers: Rule 23** – guarding the machineries; **Rule 24** – working near running machines and equipment; **Rule 25** – working by young person at dangerous places; **Rule 26** – energy stop and breakers using; **Rule 27** – minimum distance for reciprocating parts and other materials, path of walkway; **Rule 28** – safe-guarding for running machines; **Rule 29** – not be duty ladies and children at cotton ginning machine; **Rule 30** – lay down the hoists and lifts using touch and good machines; **Rule 31** – for cranes and others; **Rule 32** – under control of safe speed of machine; **Rule 33** – working at under safe pressure; **Rule 34** – floors, walkway, ladder for safe; **Rule 35** – covering the vessel, sump, tank, and pit; **Rule 36** – not work for lift, carry, transport the heavy materials, etc., are conducted by project person.

### **3.1.10 The Law Amended the Factory Act 1951**

Pyidaungsu Hluttaw enacts this law as 2016, Pyidaungsu Hluttaw Law No. 12 dated at 20<sup>th</sup> January, 2016.

In this law, **Rule 2** – substitute of ‘General Manager, Factories and General Labor Laws, Inspection Department’ instead of Chief officer; Inspection officer instead of inspector, etc.; **Rule 3** – substitution of workable age of labor and others, etc.; **Rule 4** – substitution of ‘Ministry of Labor, Employment and Social Security’ instead of President and other substitution and expired rules and penalty (totally 37 numbers of rules) are complied by person of project.

### **3.1.11 The Law Amending the Leaves and Holidays Act, 1951**

The State Peace and Development Council enacts this law as the State Peace



and Development Council Law No. 6/2006 dated 30<sup>th</sup> May, 2006.

In this law, **Rule 2** – deleting, substitutions; **Rule 3** – substitution of Inspection Officer instead of Inspector; **Rule 4** – substitution of fine amount; **Rule 5** – substitution of the Myanmar Mines Law instead of the Mine Act are conducted.

### **3.1.12 Leave and Holiday Rules**

Ministry of Labor, Immigration and Population enacts this law as Notification No. 69/2018 dated 26<sup>th</sup> April, 2018.

In this law, **Chapter 2 Weekly Day Off and Gazette Holiday Rules 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15** – about condition of weekly day off, working hour, leave and day off continuation, etc., are conducted. **Rule 16 to 22** – about Gazette Holidays for Daily Wages Workers, demand work on Gazette Holiday, informing to inspector, etc., are conducted; **Chapter 3 Leave: Rule 23, 24, 25, 26, 27** – about types of leaves, leaves and holiday continuation, relocation, suspension of duty, reduction of salary not allowing within leaving period are concerned rules about taking the casual leave, earned leave, medical leave, maternity leave are conducted. **Chapter 4 Duties and Responsibilities of Worker; Chapter 5 Duties and Responsibilities of an Employer: Rule 49, 50** are complied by person of project.

### **3.1.13 Employment and Skill Development Law**

Pyidaungsu Hluttaw enacts this law as Pyidaungsu Hluttaw Law No. 29/2013 dated 30<sup>th</sup> August, 2013. In this law, **Chapter 3 Signing Employment Agreement: Rule 5** – making agreement within 30 days including such as type, probation period, wage, salary, etc.; **Chapter 5 Employee Skill Development and Doing Training Program: Rule 14** – training program; **Rule 15** – carrying out the training; **Chapter 9 Offence and Penalties: Rule 34, 35, 36, 37** – about penalties in fine and imprisonment are conducted.

### **3.1.14 Natural Disaster Management Law**

Pyidaungsu Hluttaw enacted this law as the Pyidaungsu Hluttaw Law No. 21/2013 dated 31<sup>st</sup> July, 2013. In this law, **Chapter II Objectives: Rule 3** – states that to reduce disaster risks, forming the National Committee and Local Bodies, coordinating with non-government organization or international organization, and regional organizations, conserving and restoring the environment affected by natural disaster, providing health, education, social and livelihood programs in order to bring about better living conditions for victims; **Chapter VI Natural Disaster Management: Rule 13** – the department, organization or person that has been assigned responsibility under this law, shall to undertake the plan for preparatory and preventive measures for natural disaster risk, reduction in pre-disaster period, emergency responses including search and rescue during natural disaster, rehabilitation and reconstruction activities for improving better living standard in post disaster period and conservation of the environment, etc.; **Rule 14, 15, 16, 17, 18** – state the plans for pre, during strike and post disaster are conducted by person



of project; **Chapter VIII Offence and Penalties: Rule 25, 26, 27, 28, 29, 30** – state that the imprisonment and fine are conducted by person.

### **3.1.15 The Law Relating to Assistance, Care and Treatment on Injured Emergency Patient**

Pyidaungsu Hluttaw enacted this law as the Pyidaungsu Hluttaw Law No. 53/2014 dated 5<sup>th</sup> December, 2014. In this law, **Chapter II Duties to Assist and care for Injured Emergency Patient: Rule 3** – state that a person who finds injured emergency patient has a duty for emergency assistance and care; **Rule 4** – caring and transferring the injured emergency patient by first aid, caring appropriate care, arranging to send to hospital or clinic, informing police station or police patrol, responsible persons of relevant ward or village; **Rule 6** – duties of hospital or clinic; **Rule 7** – duties of police station or police patrol; **Rule 8** – duties of fire station; **Rule 9** – duties of ward or village head; **Rule 10** – duties of every person are conducted by person of project; **Chapter III Offences and Penalties: Rule 11** – imprisonment and fine for whoever obstructs or disturbs to delay the transporting of injured emergency patient to hospital or clinic are known and complied by person of project.

### **3.1.16 1972, Public Health Law**

Union Revolutionary Council enacts this law dated 12<sup>th</sup> January, 1972. In this law, **Chapter II Prevention of Public Health: Rule 3** – state must advise, inspect, supervise, reform and prohibit the following health affairs in order to better health of people – (i) to maintain surrounding, drinking water, air and residence, road in clean and safe, (ii) to maintain food safety, (iii) to maintain not harmful utensils, (iv) communicable disease, (v) public health care, (vi) medicine; **Chapter V Offences and Penalties: Rule 9** – imprisonment and fine for penalty are known and conducted by project person.

### **3.1.17 Prevention and Control of Communicable Diseases Law**

The State Law and Order Restoration Council enact this law as the State Law and Order Restoration Council Law No. 1/95 dated 20<sup>th</sup> March, 1995.

In this law, **Chapter VII Quarantine: Rule 14** – states that right of person suffering from Principal Epidemic Disease to leave and return to his house, right of people living in the house, ward, village or township infected by Principal Epidemic Disease to leave and return thereto, right of people from outside to enter the house, ward, village or township infected by Principal Epidemic Disease, if there is a person suffering from Principal Epidemic Disease among those people arriving by train, motor vehicle, aircraft, vessel or any other vehicle, right of such person put under quarantine up to a period necessary for medical examination, to leave and return thereto, when an outbreak of Principal Epidemic Disease occurs during the time of fair and festival, right of the public to visit the site and right to continue the festival; **Chapter VIII Penalties: Rule 15, 16, 17, 18** – states that whoever fails to

comply with measures, with directive, provision of traditional medicine practitioner, violate prohibitive or restrictive order be punished with imprisonment or fine or both are known and conducted.

### **3.1.18 Myanmar Fire Brigade Law**

Pyidaungsu Hluttaw enacts this law as 2015 Pyidaungsu Hluttaw Law No. 11 dated 17<sup>th</sup> May, 2015.

In this law, **Chapter VII Formation of the Rescue Fire Brigade: Rule 13** – factory, workshop, work-site, and business exposed to fire hazard can form rescue fire brigade; **Rule 15** – the Rescue Fire Brigade submit to get supervision and inspection by the Head of the Fire Services Department, co-operating, guidelines of Fire Service Department; **Chapter XI Prohibitions: Rule 25** – no person shall fail to abide by the directives in respect of fire precaution and prevention; **Rule 26** – not fail to form the rescue fire brigade, not fail to provide materials and for fire precaution prevention; **Rule 27, 28, 29, 30, 31** – for hiding the outbreak of fire, obstructing or disturbing; establishing fire team without directive or permission, without approval, during and outbreak of fire are known and conducted; **Chapter XII Penalty: Rule 32, 33, 34, 35, 36, 37** – expressing the imprisonment and fine are known and compiled.

### **3.1.19 Motor Vehicle Law**

Pyidaungsu Hluttaw enacts this law as Pyidaungsu Hluttaw Law No. 55 dated 7<sup>th</sup> September, 2015. In this law, **Chapter 3 Motor Vehicle Registration: Rule 4** – registration of every owner; **Rule 5** – maintaining the safe condition; **Rule 8** – requesting the temporary registration, validity of temporary registration; **Rule 10** – notifying the main changed or repaired of main parts of vehicle; **Rule 11** – taxi (rental vehicles); **Rule 12** – new owner registration; **Rule 13** – new address of owner are known and conducted; **Chapter 9 Prohibitions: Rule 45** – driving condition of vehicle; **Rule 46** – risk insurance for others; **Rule 47** – driving license; **Rule 48** – drivable types; **Rule 49** – speed, endangers others, consumption of narcotic drugs or alcohol, etc.; are known and conducted by project person; **Chapter 10 Penalties: Rule 58, 59, 60, 61, 62, 63, 64, 65, 66** – imprisonment and fine for failure to law are known and complied by person of project.

### **3.1.20 The Expressways Law**

Pyidaungsu Hluttaw enacts this law as the Pyidaungsu Hluttaw Law No. 24/2015 dated 9<sup>th</sup> April, 2015. In this law, **Chapter V Terms and Conditions, and Restrictions: Rule 8** – allowing the entering into, existing from, crossing, only by the motor vehicle, complying with the stipulated terms and conditions; **Rule 9** – speed limit, speed at necessary place and road curves, speed at the time of bad vision; **Chapter VIII Prohibitions: Rule 14** – not passing, moving, halting on foot, riding bicycle, motor cycle, trawler, carts, animals; **Rule 15** – not destruction, removing the characteristics of expressway, transferring, causing danger to the

vehicle; **Rule 16** – not tunneling, constructing the structure, digging; **Rule 17** – hindering the work driving the not allowed vehicle, growing, cutting the trees, setting-up signboard without permission, **Chapter IX Offences and Penalties: Rule 18, 19, 20, 21, 22** – state that imprisonment and fine are known and complied by person of project.

### **3.1.21 The Labor Organization Law**

Pyidaungsu Hluttaw enacts this law as the Pyiaungsu Hluttaw Law No. 7/2011 dated 11<sup>th</sup> October, 2011. In this law, **Chapter II Establishment of the Labor Organizations: Rule 3** – right of worker to join and resign as member in a labor organization; **Rule 4** – levels of organization; **Rule 5** – right to carry out its activities under its own name, seal; **Rule 6, 7** – contacting the others, members of members, organize the employers in parallel; **Chapter III Registration: Rule 9, 10, 11, 12** – for methodology of registration; **Chapter V Rights and Responsibilities of the Labor Organization: Rule 17, 18, 19, 20, 21, 22, 23** – are known and conducted. **Chapter VII Duties of Employer: Rule 29** – recognition, allowing the worker on duty not exceeding two days per month; **Rule 31** – assisting the possible help; **Chapter XI Locke-out and Strike: Rule 37, 38, 39, 40, 41, 42; Chapter XII Prohibitions: Rule 43, 44, 45, 46, 47, 48, 49, 50; Chapter XIII Penalties: Rule 51, 52, 53, 54** – including imprisonment and fine are known and conducted by person of project.

### **3.1.22 The Labor Organization Rules**

The Republic of the Union of Myanmar, Ministry of Labor exercised this law as Notification No. 1/2012 dated 29<sup>th</sup> February, 2012.

In these Rules, **Chapter II Formation of Labor Organizations: Rule 3** – participating in organization, only one worker organization and right to resign of worker; **Rule 4** – levels of worker organization such as Basic, Township, Region or State; **Rule 5** – executive committee member, equipment; **Rule 6, 7** – the executive committee election methodology and term; **Chapter V Rights and Duties of Labor Organization: Rule 22, 23, 24, 25, 26, 27, 28, 29** – preparation its rules, determining its representatives and training, establishing a fund, informing to other organization, using fund, providing the lower level organization, merging and recessing; changing of Executive Committee Member; **Chapter VI Duty of the Employer: Rule 30** – forming employer organization in parallel are known and conducted by person of project.

### **3.1.23 The Workmen's Compensation Act, 1923 (Act No. VIII of 1923, 5<sup>th</sup> March, 1923)**

An act is to provide for the payment by certain classes of employers to their workman of compensation for injury by accident. In this act, **Chapter II Workmen's Compensation: Rule 3** – employers' liability for compensation for injury of workmen; **Rule 4** – amount of compensation; **Rule 5** – method of

calculating wages; **Rule 6** – renew; **Rule 7** – commutation of half-monthly payments; **Rule 8** – distribution of compensation; **Rule 9** – compensation not to be assigned, attached or charged; **Rule 10** – notice and claim; **Rule 11** – medical examination; **Rule 12** – contracting; **Rule 13** – remedies of employers against stranger; **Rule 14** – insolvency of employer; **Rule 15** – special provisions relating to masters and seamen; **Rule 16** – returns as to compensation; **Rule 17** – contracting out; **Rule 18** – proof of age are known and conducted.

### **3.1.24 The Law Amending the Workmen’s Compensation Act, 1923**

The State Peace and Development Council enact this law as the State Peace and Development Council Law No. 4/2005 dated 11<sup>th</sup> May, 2005. In this law, **Rule 2** – substitution of (i) any person employed otherwise than by way of manual labor whose monthly wages exceed the amount prescribed by notification by the Ministry of Labor, with the approval instead of clause (n) (i) of sub-section (1) of section 2 of the Workmen’s Compensation Act, 1923; **Rule 3** – substitution of amount of compensation, deleting some expression are known and complied.

### **3.1.25 The Settlement of Labor Dispute Law**

Pyidaungsu Hluttaw enacts this law as the Pyidaungsu Hluttaw Law No. 5/2012 dated 28<sup>th</sup> March, 2012. In this law, **Chapter VI Settlement of Dispute: Rule 23** – may applying to the competent court in person or by the legal representative; **Chapter VIII Prohibitions: Rule 38** – failing to negotiate and coordinate; **Rule 39** – altering the conditions immediately; **Rule 40** – proceeding to lock-out or strike; **Rule 41** – carrying out lock-out or strike; **Rule 42** – prohibiting the right to work or strike; **Rule 43** – failing to abide agreement; **Rule 44** – failing to arrange to examine and produce documents; **Rule 45** – failing to appear person in legal representative; **Chapter IX Penalties: Rule 46, 47, 48** – punishment fine are known and complied by person of project.

### **3.1.26 2016 The Payment of Wages Act**

Pyidaungsu Hluttaw enacts this law as 2016 Pyidaungsu Hluttaw Law No. 17 dated 25<sup>th</sup> January, 2016. In this law, **Chapter 2 Methods of Payment and Time-frame: Rule 3** – payment in local or foreign currency, cash, cheque or deposit; **Rule 4** – pay for part-time, daily, weekly, etc.; **Rule 5** – difficulties to pay; **Rule 6** – allowing the appropriate time; **Chapter 3 Deductions: Rule 7, 8, 9** – absence deduction, deduction for others, deduction from for fail to perform their duties, amount of deduction; **Rule 10** – deduction permission from Department concerning why and how; **Rule 11** – fining; **Rule 12** – asking for unreasonable deduction , payment not made by due date; **Chapter 7 Prohibitions: Rule 22, 23** – breaching the terms, bylaws, notifications and orders by this Act; **Chapter 8 Offences and Penalties: Rule 24, 25, 26, 27** – imprisonment and fines are known and conducted by person of project.

### **3.1.27 The Social Security Law, 2012**

Pyidaungsu Hluttaw enacts this law dated 3<sup>rd</sup> August, 2012. In this law, **Chapter XI Offences and Penalties: Rule 93, 94** – imprisonment and fines for prosecuting and fouls to comply are known and conducted by the project person.

### **3.1.28 Patent Law**

Pyidaungsu Hluttaw enacts this law as 2019 Pyidaungsu Hluttaw Law No. 7 dated 11<sup>th</sup> March, 2019. In this law, **Chapter 7 Inventions Eligible for Protection: Rule 13** – novelty of invention; **Chapter 8 Inventions ineligible for Protection:** ineligible due to theories, and mathematical calculation systems, rules and regulation, pure computer system, etc.; **Chapter 24 Penalties: Rule 105, 106** – imprisonment and fine for convicting are known and conducted.

### **3.1.29 The City of Yangon Development Law**

The State Law and Order Restoration Council enact as the State Law and Order Restoration Council Law No.11/90 dated 14<sup>th</sup> May, 1990. In this law, **Chapter III Duties and Responsibilities of the Committee: Rule 7(d), (e), (f), (g), (j), (m), (o), (p)** – construction, repairing and demolition of building, demolition and resettlement of squatters, water supplying, public health, precautionary measures against fire are known and conducted.

### **3.1.30 The Environmental Conservation Law**

Pyidaungsu Hluttaw enacts this law as the Pyidaungsu Hluttaw Law No. 9/2012 dated 30<sup>th</sup> March, 2012. In this law, **Chapter X Prior Permission: Rule 22** – applying for the prior permission; **Chapter XI Insurance: Rule 26** – taking assurance of prior permission holder; **Chapter XII Prohibition: Rule 28** – operating without prior permission; **Rule 30** – exporting, importing, producing, storing, carrying out without permission; **Chapter XIII Offences and Penalties: Rule 31, 32, 33, 34** – imprisonments and fines for failing the prohibitions are known and complied.

### **3.1.31 Environmental Conservation Rules**

Ministry of Environmental Conservation and Forestry issues this rule as Notification 50/2014 dated 5<sup>th</sup> June, 2014. In these rules, **Chapter XII Prior Permission: Rule 63** – applying the application (Form 1); **Rule 67** – obtaining the approval; **Rule 68** – for small scaled; **Chapter XIII Prohibitions: Rule 69** – about hazardous waste or substance, damage of ecosystem are known and complied by person.

### **3.1.32 National Environmental Quality (Emission) Guidelines**

Ministry of Environmental Conservation and Forestry issues the National Environmental Quality (Emission) Guidelines as Notification 615/2015 dated 29<sup>th</sup> December, 2015. In these guidelines, subsection 1.1 Air Emission; subsection 1.2

Wastewater for General Guidelines; subsection 1.3 Noise Levels; subsection 1.4 Odor and section 2.0 Industry Specific Guidelines including subsection 2.3 Manufacturing; 2.3.18 Breweries and Distilleries are conducted by the factory person.

### **3.1.33 Environmental Impact Assessment Procedure**

Ministry of Environmental Conservation and Forestry issues as Notification No. 616/2015 dated 29<sup>th</sup> December, 2015. In this law, **Chapter II Establishment of the Environmental Impact Assessment Process: Rule 3** – requirements to undertaken IEE or EIA for everyone; **Rule 4** – requirement of prior permission; **Rule 5** – prior permission for small scale; **Rule 8** – developing an EIA or IEE or EMP, obtaining ECC, mitigation adverse impacts for any project already exist; **Rule 9, 10, 11, 12, 13** are known and complied by person.

### **3.1.34 The Boiler Law**

Pyidaungsu Hluttaw enacts this law as ‘**The Boiler Law**’ dated 14<sup>th</sup> July 2015 by The Pyidaungsu Hluttaw Law No. 39, 2015.

In this law, **Chapter I** Title and Definition, express Boiler, Steam, Pipe, Feed Pipe, etc. **Chapter II** Objectives, **Chapter III** Boiler Standards and Regulation for Boiler Inspection; **Chapter IV** Registration, **Rule 5** - Any person desirous to use a boiler for any enterprise shall register under this law; **Rule 6** - Standards of boiler; **Rule 7** - attachment of documents and certificates; register and paying the fees; **Rule 13** - renewing the certificate; **Rule 14** - applying in advance to get permission as more than allowable pressure, repairing, altering, adding or renewing accessories; **Rule 19** - shall not use over allowable pressure, repair safety value pressure; any action without permission; **Rule 20** - shall not use without certificate, void certificate, revoked certificate; **Chapter VIII** Prohibition; it concerning the altering the register number, repairing without certificate, operating without certificate, adjusting the safety valve, manufacturing the boiler as **Rule 59, 60, 61, 62, and 63** - **Chapter XIV**; Offence and Penalty, states fine amounts and imprisonment at **Rule 64, 65, 66, 67, 68, 69, 70, 71, 72, 73** are conducted by factory person.

### **3.1.35 The Explosives Act (India Act IV, 1884, 1st July, 1887)**

In this Act, **Rule 4** - definition, **Rule 5** - power to make rules as to licensing of the manufacture, possession, use, sale, transport and importation of explosives; **Rule 6** - power for president to prohibit the manufacture, possession or importation of specially dangerous explosives; **Rule 7** - power to make rules conferring power of inspection, search, seizure detention and removal; rules notice of accidents; **Rule 9** - inquiry into accidents; **Rule 10** - forfeiture of explosives; **Rule 11** - Distress of vessel; **Rule 12** - Abetment and attempts; **Rule 13** - Power to arrest without warrant persons committing dangerous offences; **Rule 14** - Saving for manufacture, possession, use, sale, transport of importation by Government; **Rule 15** - Saving of Arms Act; **Rule 16** - Saving as to liability under other law; **Rule 17** - Extension of

definition of ‘explosive’ to other explosive substances; **Rule 18** - Procedure for making rules are conducted by factory person.

### **3.1.36 The Explosive Substances Act (India Act VI, 1908)**

This Act extends to the whole of the Union of Burma and applies also to all citizens of the Union and all servants of the Government wherever they may be [India Act VI, 1908] [8<sup>th</sup> June, 1908]. In this Act; **Rule 1**, extent and application, **Rule 2**, Definition of ‘explosive substance’, **Rule 3**, punishment for causing explosion likely to endanger life or property; **Rule 5**, punishment for making or possessing explosives under suspicious circumstances, **Rule 6**, Punishment of abettors; **Rule 7**, Restriction on trial of offences; are conducted by person concerned at factory.

## **3.2 The Laws Suggested by Environmental Conservation Department to Fulfil in additional upon the Environmental Management Plan Report Prepared at December 2018**

### **3.2.1 National Environmental Policy (2019)**

### **3.2.2 Yangon City Development Committee (2018)**

### **3.2.1 National Environmental Policy (2019)**

In this policy, the **Foreword** of the State Counsellor is firstly stated and there are **Introduction; Policy Approach; National Environmental Policy Vision and Mission; National Environmental Policy Principles; and Implementing the National Environmental Policy** as five sections.

In **Foreword**, protection of unique environment; valuable resources and rich biodiversity; ensuring complementarity between the 2030 **Sustainable Development Goals** and the protection of environmental assets and this new policy being long term, strategic guidance and confidence of Counsellor that cooperation and dedication of who love and value Myanmar will be able to attain good of peaceful, prosperous and beautiful country are informed.

In **Introduction**, treatments to Myanmar’s natural capital as deforestation, mangrove loss, illegal wildlife trade, unregulated mineral extraction and environmental quality deterioration and additional environmental challenges as air, water pollution, land contamination and hazardous waste results of opening of country’s economy, increasing foreign and domestic investment are stated initially. Moreover, conditions of country as most vulnerable to climate change, natural

disasters, extreme weather events, responding of Government, and being long-term guidance for government organization, civil society, the private sector and partners on achievement of environmental protection and sustainable development objectives are informed finally.

In **Policy Approach**, basic foundations of new policy on Myanmar's 1994 National Environmental Policy; 1997 Myanmar 2008 Constitution; 2012 National Sustainable Development Strategy; 2015 National Comprehensive Development Plan; 2018 Myanmar Sustainable Development Plan and Myanmar's Commitments of Multilateral Environmental Agreements, including the 2015 Paris Agreement are stated in first. The second, environmental protection, economic, social development and poverty alleviation; approaching to Sustainable Development Goals as end poverty, fight inequality, injustice and tackle climate change by 2030 is informed. In third, serving of Policy as guide in mapping, direction, foundation of environmental considerations are stated.

**The Vision of policy** is as follow 'A clean environment, with healthy and functioning ecosystems, that ensures inclusive development and wellbeing for all people in Myanmar'. **The Mission** of policy is 'To establish national environmental policy principles for guiding environmental protection and sustainable development and for mainstreaming environmental considerations into all policies, laws, regulations, plans, strategies, programmes and projects in Myanmar.

In **National Environmental Policy Principles**, there are three parts, first part 'clean environment and healthy, functioning ecosystems, second part 'sustainable economic and social development', third part 'mainstreaming environmental protection and management'.

In **Implementing the National Environmental Policy**, putting this policy into action through a **Strategies Framework** and series of master plan by Government, including institutional strengthening, monitoring, and enforcement, public participation, dispute resolution and financing; preparing **Master Plans** and linkages of there three are informed.

### **3.2.2 2018 Yangon City Development Committee Law**

Yangon Division Hluttaw law No.5/ dated at 28<sup>th</sup> June 2018. In this law,





**Chapter 1**; title and definition, **Rule 1** - states the 63 numbers of terms; **Chapter 11**; objectives as **Rule 2**, **Chapter III** setting up as **Rule 3**; **Rule 4,5,6,7,9,10,11,Chapter IV**; election, and dismissal state **Rule 12 to 23**; **Chapter 5**; Duties of Committee as **Rule 25**; **Chapter VII**; Setting up the department and officer and up to **Chapter 28** are planning the town plan, noting gone and management; management of land, garden and gymnasium, building, etc. and **Chapter 29** prohibition, prohibition about townplan and land management, prohibition about garden and gymnasium about buildings, about ancient Monuments taxation, sheet, budge and drainage; water supply; sewages system, health, bagger, animal breeding and slaughter, environmental conservation; administration; especially **Rule 322** – about environmental conservation states 32 rule headings are conducted by person of factory; **Chapter 30**; Offenses and penalty states as rule 324 attached as annex informing fine and imprisonment are also implied by employees of factory.

### **3.3 Institutional frameworks of Myanmar Government concerning the relevant policies, the legislation and institutional frameworks, environmental quality guideline value standards**

- (1) The Penal Code of Offences Affecting the Public Health, Safety Convenience, Decency and Morals, 1961
- (2) The Obstruction in Fairway Act, 1881
- (3) The Yangon Water-works Act, 1885
- (4) The Explosive Act, 1887
- (5) The Explosive Substances Act, 1989
- (6) The Yangon Police Act, 1899
- (7) The Yangon Port Act, 1905 (Amendment, 1959)
- (8) The Canal Act, 1905
- (9) The Defile Traffic Act, 1907
- (10) The Highway Law, 2000 (Amendment, 2015)
- (11) The Town Act, 1907
- (12) The Village Act, 1907
- (13) The Ports Act, 1908
- (14) The Embankment Act, 1909
- (15) The Inland Steam Vessels Act, 1917
- (16) The Oilfields Act, 1918 (Amendment, 2010)
- (17) The Poison Act, 1919
- (18) The City of Yangon Municipal Act, 1922 (Law amending the City of Yangon

- Municipal Act, 1991) (Amendment, 1961)
- (19) The Workmen's Compensation Act, 1923 (Amendment, 2005)
  - (20) The Water Power Act, 1927
  - (21) The Underground Water Act, 1930
  - (22) The Myanmar Aircraft Act, 1934
  - (23) The Police Act, 1945
  - (24) The Essential Supplies and Services Act, 1947
  - (25) The Emergency Provision Act, 1950
  - (26) The Factories Act, 1951 (Amendment, 2016)
  - (27) The Oilfield (Workers and Welfare) Act, 1951
  - (28) The Leave and Public Holidays Act, 1951 (Amendment, 2014)
  - (29) The Archive Properties (Amendment) Act, 1962
  - (30) The Union of Myanmar Public Health Law, 1972
  - (31) The Territorial Sea and Maritime Zone Law, 1977
  - (32) The Law Relating to Aquaculture, 1989
  - (33) The Law Relating to the Fishing Rights of Foreign Fishing Vessels, 1989 (The Law Amending the Law Relating to the Fishing Rights of Foreign Fishing Vessels, 1993)
  - (34) The Myanmar Marine Fisheries Law, 1990 (The Law Amending the Myanmar Marine Fisheries Law, 1993)
  - (35) The Pesticide Law, 1990
  - (36) The Private Industrial Enterprise Law, 1990/1991
  - (37) The Freshwater Fisheries law, 1992
  - (38) The Salt Enterprise Law, 1992
  - (39) The National Drug Law, 1992 (Amendment, 2014)
  - (40) The Forest Law, 1992 and The Forest Rules, 1995
  - (41) The Narcotic Drugs and Psychotropic Substances Law, 1993
  - (42) The Plant Pest Quarantine Law, 1993
  - (43) The Myanmar Insurance Law, 1993
  - (44) The Myanmar Hotel and Tourism Law, 1993
  - (45) The Animal Health and Development Law, 1994
  - (46) The Science and Technology Development Law, 1994
  - (47) The Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law, 1994

- (48) The Myanmar Mines Law, 1994
- (49) The Prevention and Control of Communicable Disease Law, 1995 (Amendment, 2011)
- (50) Myanmar Pearl Law, 1995 (Amendment, 2014)
- (51) The Myanmar Gemstone Law, 1995
- (52) The Traditional Drug Law, 1996
- (53) The National Food Law, 1997
- (54) The Protection and Preservation of Cultural Heritage Region Law, 1998 (Amendment, 2009)
- (55) The Atomic Energy Law, 1998
- (56) The Fertilizer Law, 2002
- (57) The Control of Smoking and Consumption of Tobacco Product Law, 2006
- (58) The Conservation of Water Resources and Rivers Law, 2006 and The Conservation of Water Resources and Improvement of River Systems Rule, 2013
- (59) The Law Relating to Private Health Care Services, 2007 (Amendment, 2013)
- (60) The Constitution of the Union of Myanmar, 2008
- (61) The Labor Organization Law, 2011
- (62) The Environmental Conservation Law, 2012
- (63) The Farmland Law, 2012 and The Farmland Rules, 2012
- (64) The Myanmar Foreign Investment Law, 2012 (Amendment, 2015) and The Myanmar Foreign Investment Rules, 2013
- (65) The Settlement of Labor Dispute Law, 2012 (Amendment, 2014)
- (66) The Vacant, Fallow and Virgin Lands Management Rules, 2012
- (67) The Ward or Village Tracts Administration Law, 2012 (Amendment, 2016)
- (68) The Development of Employment and Skill Law, 2013
- (69) The Minimum Wage Law, 2013 and The Minimum Wage Rules, 2013
- (70) The Prevention of Hazard from Chemical and Related Substances Law, 2013
- (71) The Electricity Law, 2014
- (72) The Environmental Conservation Rules, 2014
- (73) The Myanmar Special Economic Zone Law, 2014
- (74) The Social Security Law, 2014 and The Social Security Rules, 2014
- (75) The Motor Vehicles Law, 2015
- (76) The Environmental Impact Assessment Procedures, 2015

- (77) The National Environmental Quality (Emission) Guidelines, 2015
- (78) The Myanmar Fire-brigade Law, 2015
- (79) The Protection and Preservation of Ancient Monuments Law, 2015
- (80) The Payment of Wage Law, 2016

### **3.4 International Conventions, Treaties and Agreements by Myanmar Government**

Myanmar has signed a number of international treaties related to the environment which may have implications for the project. These include:

- Convention Concerning the Protection of the World Cultural and Natural Heritage
- Montreal Protocol on Substances that Deplete the Ozone Layer & all amendments
- Stockholm Convention on Persistent Organic Pollutants
- Convention on Biological Diversity
- Cartagena Protocol on Biosafety
- International Tropical Timber Agreement
- Ramsar Convention on Wetlands
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- ASEAN Agreement on the Conservation of Nature and Natural Resources
- United Nations Convention to Combat Desertification
- United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol
- ASEAN Agreement on Trans-boundary Haze
- Global Tiger Forum, India in August 1994.

## 4.0 DESCRIPTION OF THE FACTORY

The relevant facts about **URSP Mill** are as follow:

### 4.1 Factory Background and Objectives

**URSP Mill** produces the rice straw pulp sheets and exports to abroad. The production capacity is about 1350 tons pulp sheet per year.

The factory was established at 2003 and all MACHINERIES were available in local as fabricating, purchasing some complicated items in good second hand condition and installed by local professionals.

The objectives of factory are:

- (a) To use the abundant rice straw, byproduct of agricultural sector as raw material;
- (b) To earn the foreign exchange currency;
- (c) To fulfill money for the government tax; and
- (d) To fulfill the local work opportunities.

### 4.2 Factory Location , Area and Study area

The geographical coordinates of **URSP Mill** are:

North Latitude          N-16° 50' 08.386" and

East Longitude          E-096° 16' 50.632" (See *Figure 4-1*)

Google map of this factory is shown in *Figure 4-2*. There are two garages; one saw mill and one concrete batching plant near the factory. The two garages are in the front and rear of the factory; the saw mill is in the south of the factory; and the concrete batching plant is in the north of the factory. The photo of the factory surroundings is shown in *Figure 4-3*; the garage in front of the factory is shown in *Figure 4-4*; the garage in rear of the factory is shown in *Figure 4-5*; the saw mill in the south of the factory is shown in *Figure 4-6*; and the concrete batching plant in the north of the factory is shown in *Figure 4-7*.

The area of said factory is 2.2 acre ( $L = 420'$ ,  $W = 220'$ ) and industrial estate type and own land.

The study area of impacts and mitigation measures is among the factory boundary and social, economic and cultural facts is about Dagon Seikkan Township.



**Figure 4-1: Geographical Coordinates of Factory Location**



Figure 4-2-A: Google Map of URSP Mill



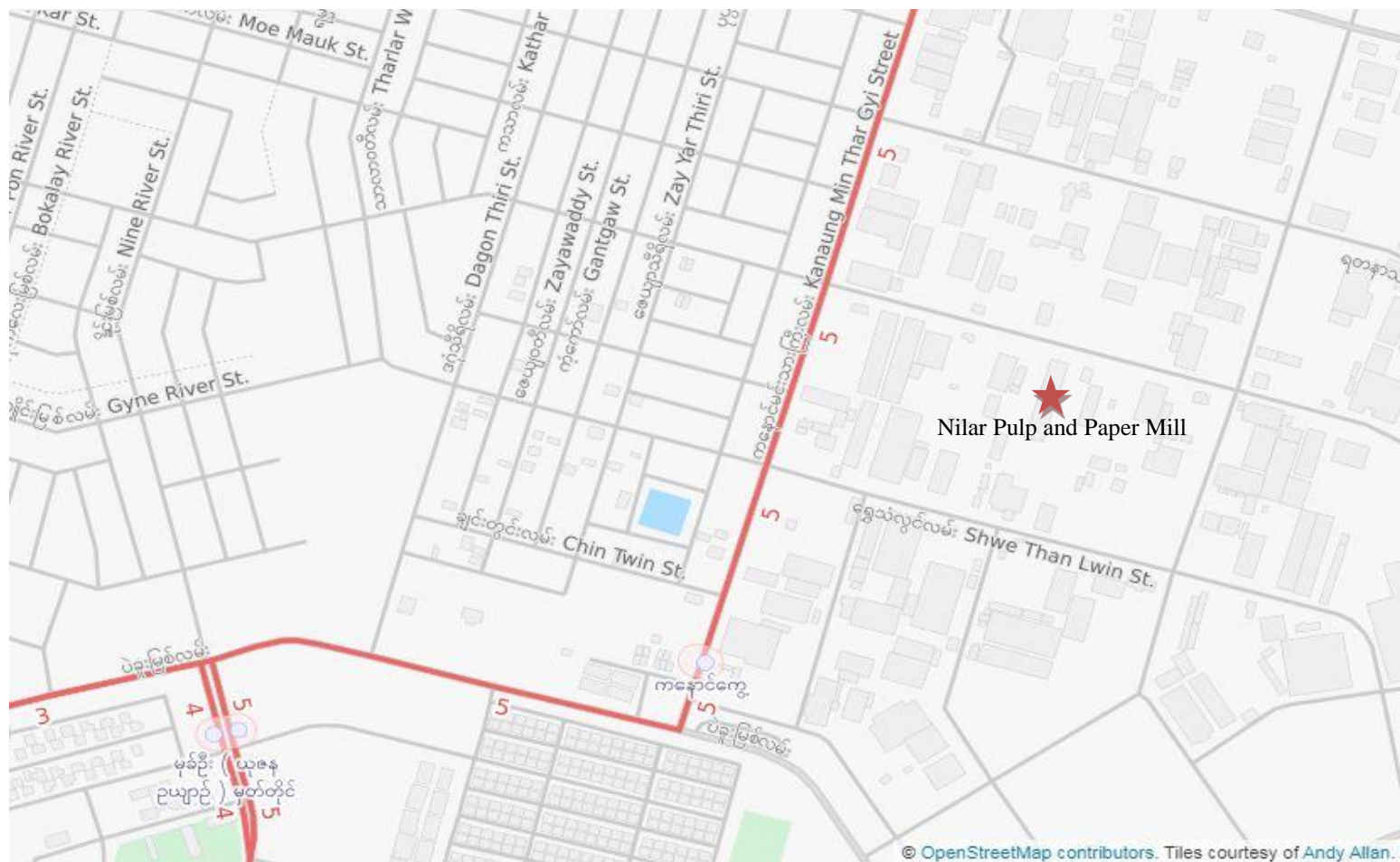
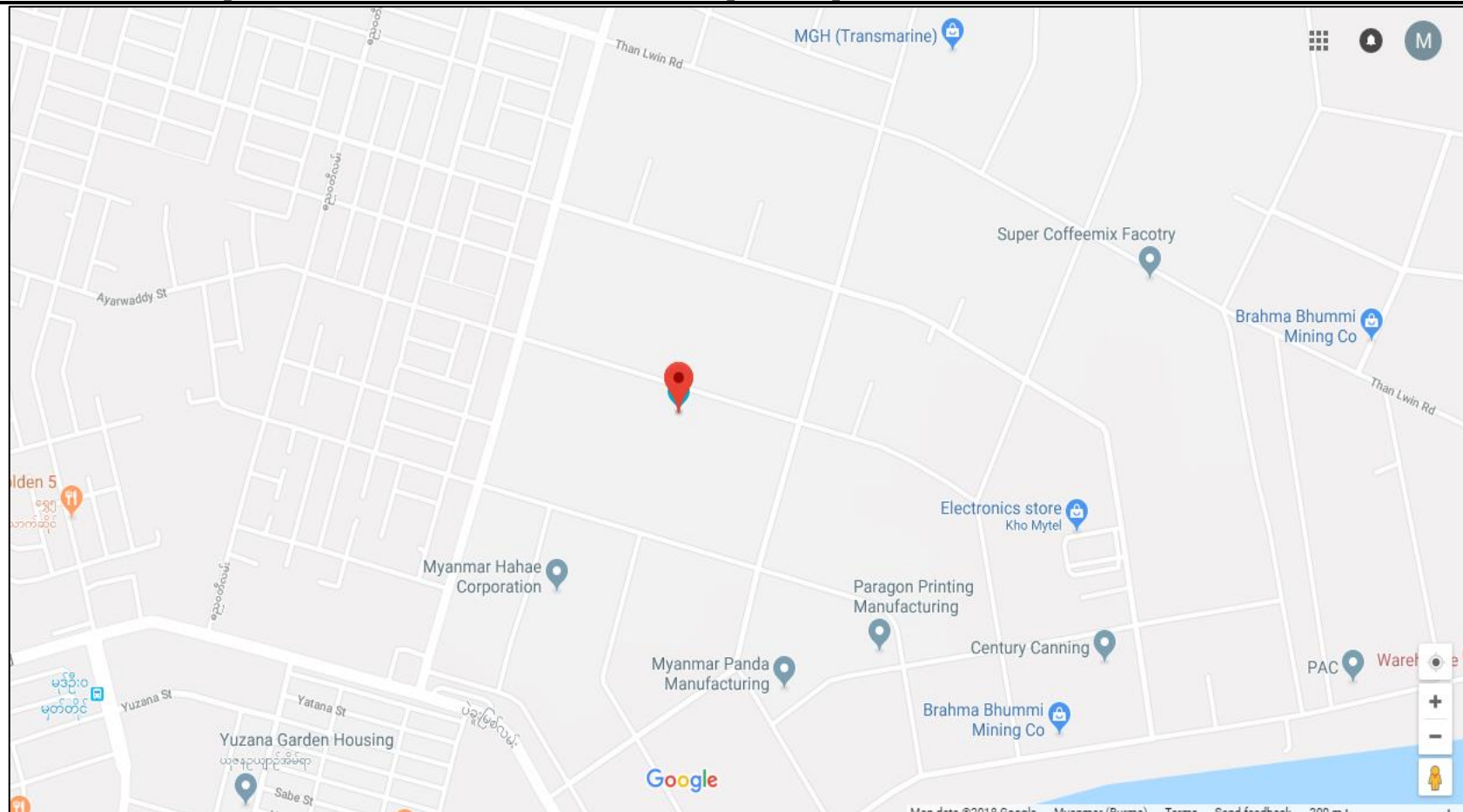


Figure 4-2-B: OSM of URSP Mill









**Figure 4-3: The Factory Surroundings**



**Figure 4-4: Garage in front of the Factory**



**Figure 4-5: Garage in rear of the Factory**



**Figure 4-6: Saw Mill in the south of the Factory**



**Figure 4-7: Concrete Batching Plant in the north of the Factory**

### **4.3 Implementation Schedule**

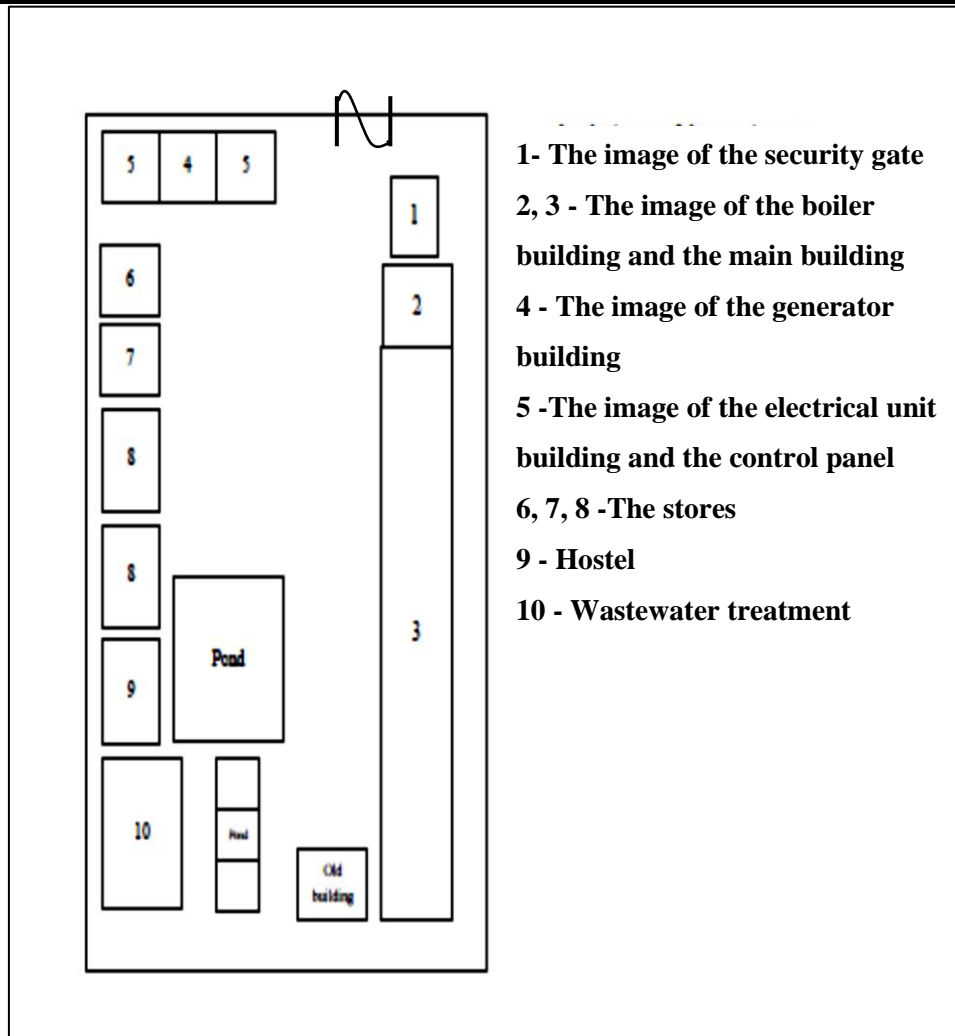
**Nilar Pulp and Paper Co., Ltd** has established **URSP Mill** since 2003. Test run was made in 2009 and the factory has started commercial production in 2010.

### **4.4 Factory Building Layout Plan**

There are nine main buildings and the building layout plan of this factory is shown in *Figure 4-8*. They are as follows:

- Security gate  
Brick Nogging, Corrugated plastic sheet roof (6'×6')
- Boiler and main building  
R-C and U Bean, Corrugated plastic sheet roof (70'×40')
- Generator building  
Brick Nogging, Corrugated galvanized sheet roof (16'×20')
- Electricity control building  
Container box, corrugated galvanized sheet roof (6'×6')
- Water purification building  
I Bean and square mesh, corrugated galvanized sheet roof (30'×12')
- Dining-room  
I Bean and square mesh, corrugated galvanized sheet roof (20'×20')
- Store and machine repairing room  
I Bean and square mesh, corrugated galvanized sheet roof (40'×20')
- Apartment building for labor  
I Bean and brick nogging, corrugated galvanized sheet roof (20'×30')
- Wastewater treatment building  
I bean and brick nogging, corrugated galvanized sheet roof (20'×70')

The security gate is shown in *Figure 4-9*; the boiler building and the main building are shown in *Figure 4-10*; the generator building is shown in *Figure 4-11*; the electricity control building and control panels are shown in *Figure 4-12*; the water purification building, the dining-room and the store and the machine repairing room are shown in *Figure 4-13*; and the wastewater treatment building is shown in *Figure 4-14*.



**Figure 4-8: The Building Layout Plan of Factory**



**Figure 4-9: The Security Gate**





**Figure 4-10: The Boiler Building and the Main Building**



**Figure 4-11: The Generator Building**



**Figure 4-12: The Electricity Control Building and the Control Panels**



**Figure 4-13: The Water Purification Building, the Dining Room, the Store and the Machines Repairing Room**



**Figure 4-14: The Wastewater Treatment Building**

#### **4.5 Raw Materials Requirements, Consumption, Available, Storage Condition**

The rice straw is used as the main raw material and its annual usage is 4,500 ~ 6000 ton. Caustic soda, Salt, rice husk, saw dust, diesel, petrol, lubricant, and binding wire used to tie the rice straw bales and the pulp product; are used as the indirect raw materials. The rice straw, the caustic bags, the rice husks and the saw dusts are stored as shown in *Figure 4-15*; *Figure 4-16*; and *Figure 4-17* respectively.

#### **Raw Materials Requirements, Available, Consumption and Storage Condition**

**Annual Basis**

<b>Sr. No.</b>	<b>Commodities</b>	<b>A/U</b>	<b>Quantity</b>	<b>Manufacturer</b>	<b>Purchase from</b>	<b>Storage Condition</b>
1.	Rice Straw	ton	5670	Local	Farmer	<b>Warehouse</b> Rice straws are piled on concrete floor and shown as Figure 4-15
2.	Caustic Soda	ton	803	China	Chemical Store	Caustic soda is packed in plastic bag and bags are piled in concrete floor under warehouse shown as Figure 4-16
3.	Common Salt	kg	2160	Local	Bayint Naung Market	Salt in plastic bag and is stored under warehouse and water treatment plant and shown as Figure. 4-16-A

4.	Rice Husk/ Saw Dust	ton	2800	Local	Farmer and Saw Mill	Rice husks are pile on concrete floor in warehouse and saw dusts are in plastic bags and store warehouse shown as Figure 4-17-A and Figure 4-17-B
5.	Binding Wire	ton	5	Local	Bayint Naung Market	Binding wire in reel and stored at warehouse
6.	Diesel	gal	500	Imported	Gas Station	Diesel is stored in 50 gallon steel drum and shown as figure 4-17-C
7.	Lubricant	gal	200	Imported	Bayint Naung Market	Lubricant is stored in 50 gallon steel drum and shown as figure 4-17-D
8.	Hydraulic Oil	gal	100	Imported	Bayint Naung Market	Hydraulic oil is stored in 50 gallon steel drum



**Figure 4-15: Rice Straw**





**Figure 4-16: The Caustic Soda Bags Pile**



**Figure 4-16-A: Common Salt**



**Figure 4-17-A: Rice Husk / Saw Dust**



**Figure 4-17-B: Saw Dust Bags**



**Figure 4-17-C: Diesel**



**Figure 4-17-D: Lubricant**

#### **4.6 Production Procedure**

**URSP Mill**, the unbleached rice straw pulp sheets production factory, uses the rice straw as a basic raw material. Production of rice straw pulp sheets from the rice straw is divided into three parts. They are as follow:

- 4.6.1 Preparation of rice straw
- 4.6.2 Production of refined pulp fiber from rice straw
- 4.6.3 Processing the pulp sheets from the refined fibers

##### **4.6.1 Preparation of Rice Straw**

Purchased raw rice straws are transported to the factory as the bales. Plastic is prohibited to be used as packaging material because using the plastic material is banned in the finished product quality control. The notices such as 'PLASTIC FREE AREA' are displayed in the factory.

After weighing, the rice straw is loaded onto the conveyor and is cut into 1.5" size chips in the Chipper. Chipped straws are loaded onto the vibrating screen to remove the under-size chipped straws. The undersized chipped straws are used as the fuel for the boiler or are disposed by the plan of industrial zone

committee. The oversized chipped straws are taken by belt conveyor and washed by diluted black liquor.

The next steps are screening the washed chipped straws in the vibrating screen and dehydration on the dewatering belt. Then, the dewatered chipped straws are digested in the digester. The production process is controlled by a digital system by calculating the weight of dewatered chipped straws for one batch; the moisture content and the ash content of raw rice straw as well as dewatered chipped straws. The record of washing and screening; and the record of the raw rice straw, chipper, digester and blow pit are described in this section.

The bales of raw rice straw are shown in *Figure 4-18*; the instructions for plastic materials that are not allowed are shown in *Figure 4-19*; loading the raw rice straw onto the conveyor is shown in *Figure 4-20*; the weighing machine of raw rice straw usage is shown in *Figure 4-21*; the chipped rice straws are shown in *Figure 4-22*; cleaning the chipped rice straws by vibrating screen is shown in *Figure 4-23*; the undersized chipped rice straws is shown in *Figure 4-24*; loading the chip straws to the straw washer by the conveyor is shown in *Figure 4-25*; washing the chipped straws with diluted black liquor in the straw washer is shown in *Figure 4-26*; cleaning the washed chipped straws by vibrating screen is shown in *Figure 4-27*; dewatering the cleaned chipped straws in dewatering conveyor is shown in *Figure 4-28*.



**Figure 4-18: Bales of Rice Straw**



**Figure 4-19: Notification for Plastic Free Area**



**Figure 4-20: Loading of Raw Rice Straw onto the Conveyor**



**Figure 4-21: Weighing Machine for Rice Straw**



**Figure 4-22: Chipped Rice Straw**



**Figure 4-23: Cleaning the Chipped Rice Straw by Vibrating Screen**





**Figure 4-24: Undersized Chipped Rice Straw**



**Figure 4-25: Loading the Chipped Rice Straw to the Straw Washer by the Conveyor**



**Figure 4-26: Washing the Chipped Straw with Diluted Black Liquor in the Straw Washer**



**Figure 4-27: Cleaning the Washed Chipped Straws by Vibrating Screen**



**Figure 4-28: Dewatering the Cleaned Chipped Rice Straw**

Daily Cooking Data		Daily Cooking Data	
Date -		Date -	
Cook No.	-	Cook No.	-
Chipper Inlet M.C	-	Chipper Inlet M.C	-
Washed straw (M.C)	-	Washed straw (M.C)	-
AD Straw Weight	-	AD Straw Weight	-
OD Straw Weight	-	OD Straw Weight	-
Caustic Purity	-	Caustic Purity	-
Chemical Ratio	-	Chemical Ratio	-
Caustic Weight	-	Caustic Weight	-
Liquor Ratio	-	Liquor Ratio	-
Required BL	-	Required IBL	-
LAB - In charge	Production In charge	LAB - In charge	Production In charge

Daily Cooking Data		Daily Cooking Data	
Date -		Date -	
Cook No.	-	Cook No.	-
Chipper Inlet M.C	-	Chipper Inlet M.C	-
Washed straw (M.C)	-	Washed straw (M.C)	-
AD Straw Weight	-	AD Straw Weight	-
OD Straw Weight	-	OD Straw Weight	-
Caustic Purity	-	Caustic Purity	-
Chemical Ratio	-	Chemical Ratio	-
Caustic Weight	-	Caustic Weight	-
Liquor Ratio	-	Liquor Ratio	-
Required BL	-	Required IBL	-
LAB - In charge	Production In charge	LAB - In charge	Production In charge

Digester Record Form

(၂)ရက် (၁၇)ရက် တိုင်တိုင်လုပ်ကိုင်သော  
စက်ရုံ၏ စက်ရုံအတွင်း အသုံးပြုသော စက်ရုံအတွင်း

Time	Date		Date	
	Old Cook D <sub>1</sub>	New Cook D <sub>2</sub>	Old Cook D <sub>1</sub>	New Cook D <sub>2</sub>
6:00				
7:00				
8:00				
9:00				
10:00				
11:00				
12:00				
13:00				
14:00				
15:00				
16:00				
17:00				
18:00				
19:00				
20:00				
21:00				
22:00				
23:00				
0:00				
1:00				
2:00				
3:00				
4:00				
5:00				

Chipper and Digester Record Form



## Production Record

**DAILY PROCESS CONTROL REPORT**

**STRAW STORAGE**

NO	SITE	MC	ASH	REMARKS
1				
2				
3				
4				
5				
6				
7				
8				

**CHIPPER**

NO	TIME	COOK NO	MC%	INCHARGE	ASH%	INCHARGE	REMARKS
1							
2							
3							
4							
5							
6							
7							
8							

**DIGESTER**

NO	TIME	COOK NO	D1/D2	MC%	INCHARGE	ASH%	INCHARGE	REMARKS
1								
2								
3								
4								
5								
6								
7								
8								

**BLOW PIT**

NO	COOK NO	TIME	D1/D2	CONS	PH	KAPPA	INCHARGE	ASH%	RA	REMARKS
1										
2										
3										
4										
5										
6										
7										
8										

Daily Process Control Report

#### **4.6.2 Production of Refined Pulp Fiber from Rice Straw**

The uniform size rice straw chips are put into the digester. The cleaned pulp fibers are obtained by digesting the uniform size rice straw chips with caustic soda and the steam in the digester. This is the production procedure of rice straw pulp. The cellulose fibers are clung each other by the lignin. By removing the lignin, the cellulose fibers are obtained. The cleaned and uniform size rice straws are mixed with the calculated amount of caustic soda in the digester. To get the correct ratio of rice straw and the solution, this mixture is analyzed in the laboratory. When the correct ratio is achieved, the mixture is digested in the digester by closing the lid, blowing the steam and rotating the digester. To get the full steam pressure, the air in the digester is blown out while digesting. This digestion process is monitored, and the records are attached in this section end. The digester is shown in *Figure 4-29*; the loading of chipped rice straws into the digester is shown in *Figure 4-30* and the closing the lid of digester is shown in *Figure 4-31*.



**Figure 4-29: The Digester**



**Figure 4-30: Loading the Cleaned Rice Straw into the Digester**





**Figure 4-31: Closing the Lid of the Digester**

After digesting the mixture with sufficient temperature and the amount of caustic soda, the digestion step is finished. The digester is opened slowly into the blow pit. After transferring the digested materials, the black liquor (the mixture of lignin and caustic soda) and the pulp are separated. The black liquor is refilled with the caustic soda in the caustic soda solution tank and is reused to digest the rice straws in the digester. The pulps are loaded to the chest 1, 4 and 5.

The functions of the chests are storing the pulps to be continuous run, keeping good consistency of the pulp and do not settle the pulps. The pulps from the chest are carried to the thickener and the pulp and the black liquor is separated at the thickener and the black liquor is sent to the treatment plant. The pulp is sent to the chest-6. The pulp from the chest 6 is screened in the Johnson Screen and is sent to the chest-8. The pulp from the chest-8 is sent to HD cleaner and is screened in the inclined screen. The pulp is sent to the high pressure screen to remove the undersized pulp. The oversized pulp from the high pressure screen is washed in the inclined screen and washed again in the twin wire. The washed pulp from the twin wire is stored in the chest-4 and is sent to the level tank. In the level tank, the ready-to-use pulp is stored for production of cleaned pulp sheet.

Digester No -				Date -		
No	Cook No	Time	Head Pressure (PSI)	Digester Pressure (PSI)	Digester Temperature (°C)	Remark
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						

Record for Digester

WASHING SCREENING CONSISTENCY EVERY 4 HRS									
TIME	THIC		OC 6	OC 7	OC 8	NC 4	NC 5	VAT	SHIFT INCHARGE
	IN	OUT							
1									
2									
3									
4									
5									
6									
7									
8									

PAPER MACHINE									
NO	TIME	COOK NO	MC%	KAPPA	INCHARGE	ASH	INCHARGE	GW	REMARKS
1									
2									
3									
4									
5									
6									
7									
8									

FINISHED BALE								
NO	TIME	COOK NO	MC%	KAPPA	INCHARGE	ASH	INCHARGE	REMARKS
1								
2								
3								
4								
5								
6								
7								
8								

Record Form for Washing, Screening, Consistency, Paper Machines and Finished Bales

## **Environmental Management Plan-EMP** **Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

[illegible]

## Operation Record Form

Production Cooking Data							
							Date:
Cook No.							
Chipper Inlet M.C%							
Auger Outlet M.C%							
Straw A.D							
Straw O.D							
Straw Cut Start Time							
Straw Cut Stop Time							
Straw Cut Total Time							
Chemical Ratio							
Usage of NaOH(kg)							
Liquor Ratio							
Black Liquor m3							
Cooking Start Time							
Complete(psi 120) Time							
Complete (Tem-150C°) Time							
Decashing Time							
Decashing No.Time							
Cooking Stop Time							
Retention Time							
Cooking Total Time							
Blow Down Time							

Remark :

Supervisor Sign \_\_\_\_\_ Supervisor Sign \_\_\_\_\_

Record Form for Production Cooking Data



### **4.6.3 Processing the Pulp Sheets from the Refined Pulps**

The refined pulps are stored in chest-6 and are transferred to the level tank by pump. The functions of level tank are the storing the pulps for continuous operation and the recycling the pulps to overcome the overflowing. The pulps from level tank are transferred to the vats (Vat-1,2) and the pulp consistency is adjusted. The pulps from vats are pressed by pressing machine, dehydrated in the vacuum, dried by steam in dryer and pressed by drums. After these processes, the pulps are reeled in the steel axle and the rolled pulp is stored. The weight of the rolled pulp can be obtained by weighing the rolled pulp and subtracting the weight of the steel axle.

These reeled pulps are cut as the size of 30" × 20" in the sheet cutter and packed and distributed as the 50kg bales. The level tank received the pulp from chest-6 is shown in *Figure 4-32*; the vats that receive the pulps from level tank are shown in *Figure 4-33*; the cloth (felt) that is adhered by the pulps and vacuum drum are shown in *Figure 4-34*; the drum that is heated by steam is shown in *Figure 4-35*; reeling the pulps on the steel axle is shown in *Figure 4-36*; the vacuum machine is shown in *Figure 4-37*; the horizontal sheet cutter that cuts horizontally the reeled pulps is shown in *Figure 4-38*; the vertical sheet cutter that cuts vertically the reeled pulps is shown in *Figure 4-39*; packaging the pulp sheets (30" × 20" in size) is shown in *Figure 4-40*; the bale packer is shown in *Figure 4-41*; and the bale of pulp sheets are shown in *Figure 4-42*. The process flow in block diagram is shown in *Figure 4-43* and the process flow diagram is shown in *Figure 4-44*.



**Figure 4-32: Level Tank Receiving the Pulp from the Chest-6**



**Figure 4-33: Vat Receiving Pulp from the Level Tank**



**Figure 4-34: Cloth (Felt) Used in the Vacuum Drum**



**Figure 4-35: Steam-heated Drum**



**Figure 4-36: Reeling the Pulp on the Steel Axle**



**Figure 4-37: Vacuum Machine**



**Figure 4-38: Horizontal Sheet Cutter**



**Figure 4-39: Vertical Sheet Cutter**





**Figure 4-40: Packed Pulp Sheets (30" × 20" in size)**



**Figure 4-41: The Bale Packer**



**Figure 4-42: Bales of Pulp Sheets**

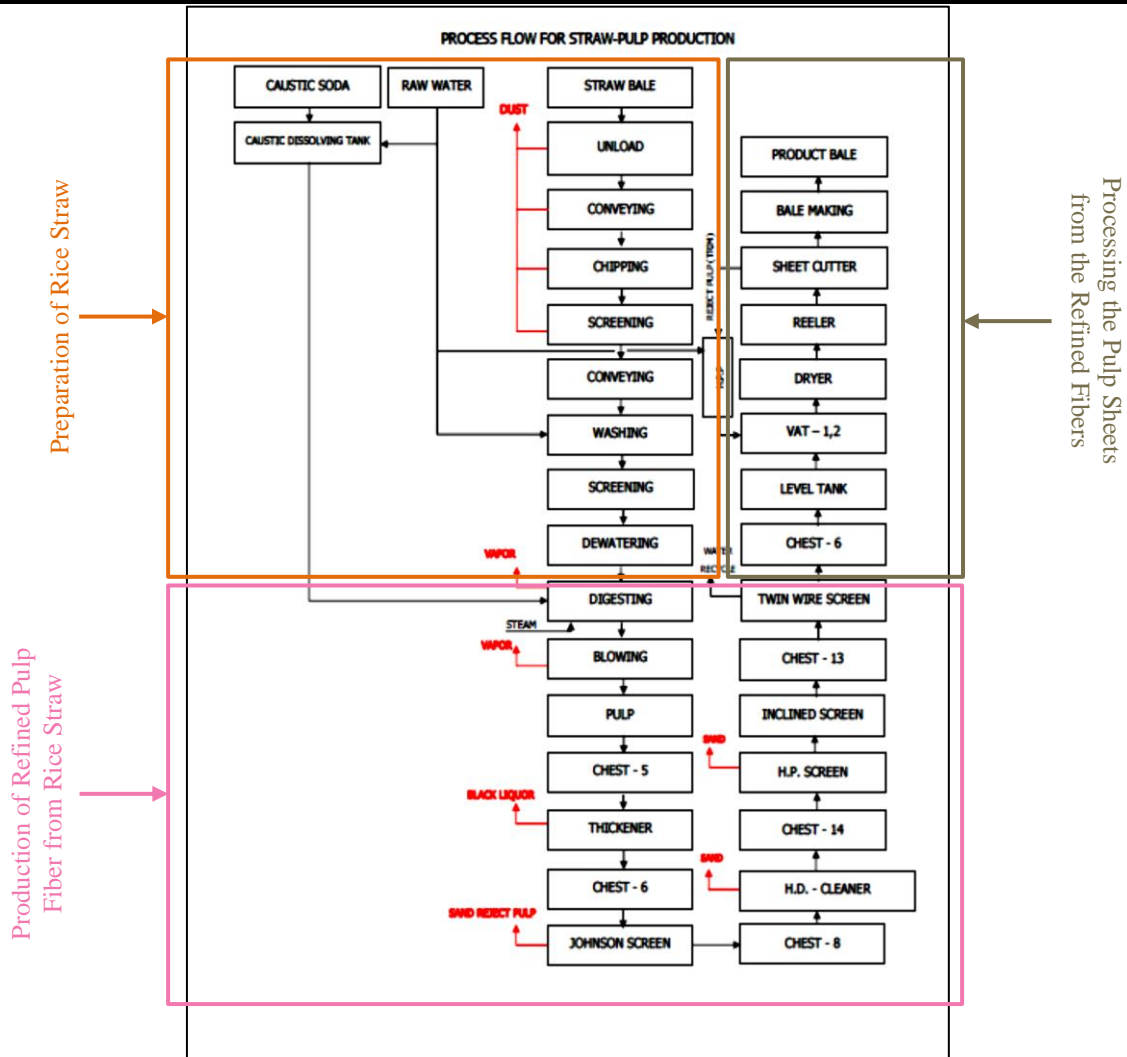


Figure 4-43: Process Flow in Block Diagram

The process flow diagram for production of unbleached rice straw pulp sheet shown in Figure 4-43 is in three portions in order to more clear as following.

- Preparation of rice straw
- Production of refined pulp fibre from rice straw
- Processing the pulp sheets from refined fibre

#### Preparation of rice straw

Preparation rice straw is 1<sup>st</sup> step in pulp sheet (unbleached) production and it is shown as Figure 4-43-A.

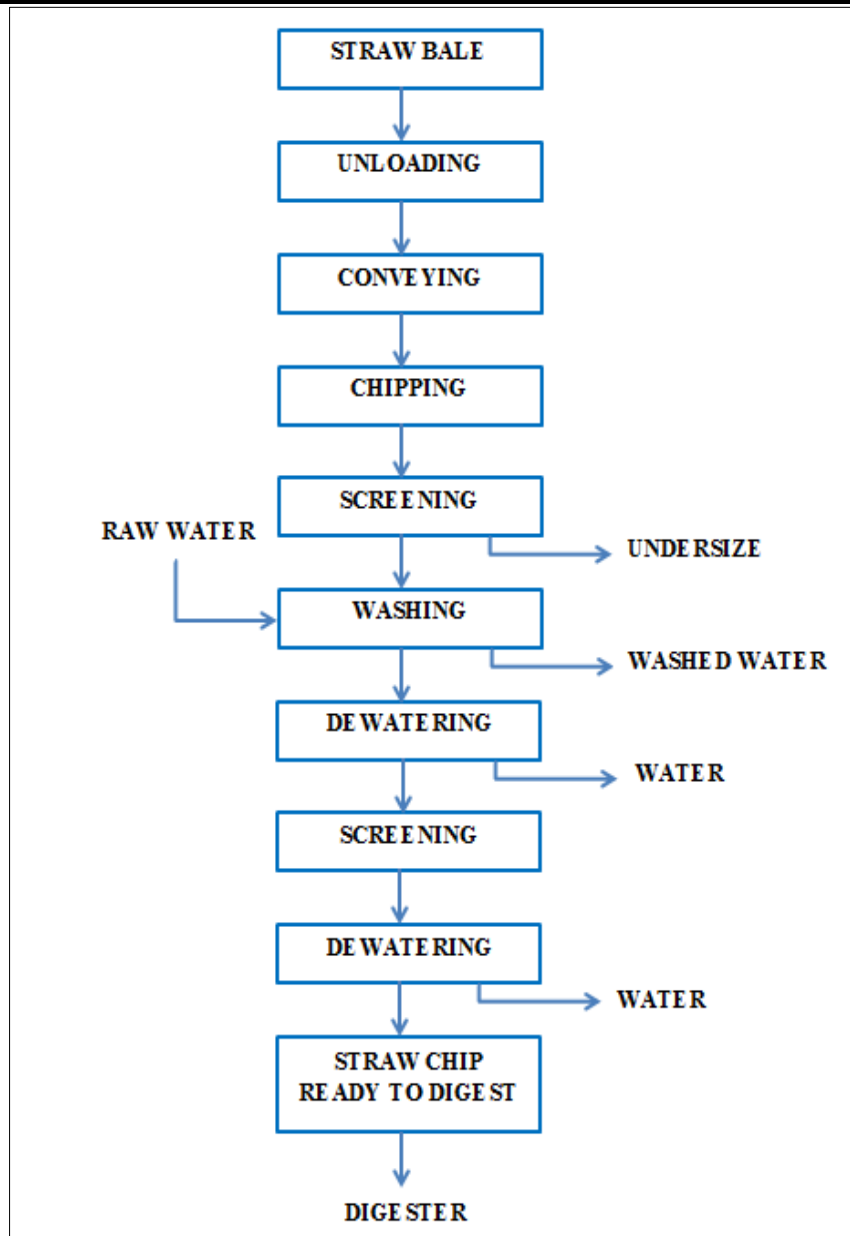


Figure 4-43-A: Flow Diagram for Rice Straw Preparation

### Preparation of refined pulp fibre from rice straws

Preparation of refined pulp fibre is 2<sup>nd</sup> step in pulp sheet (unbleached) production and it is shown as *figure 4-43-B*.

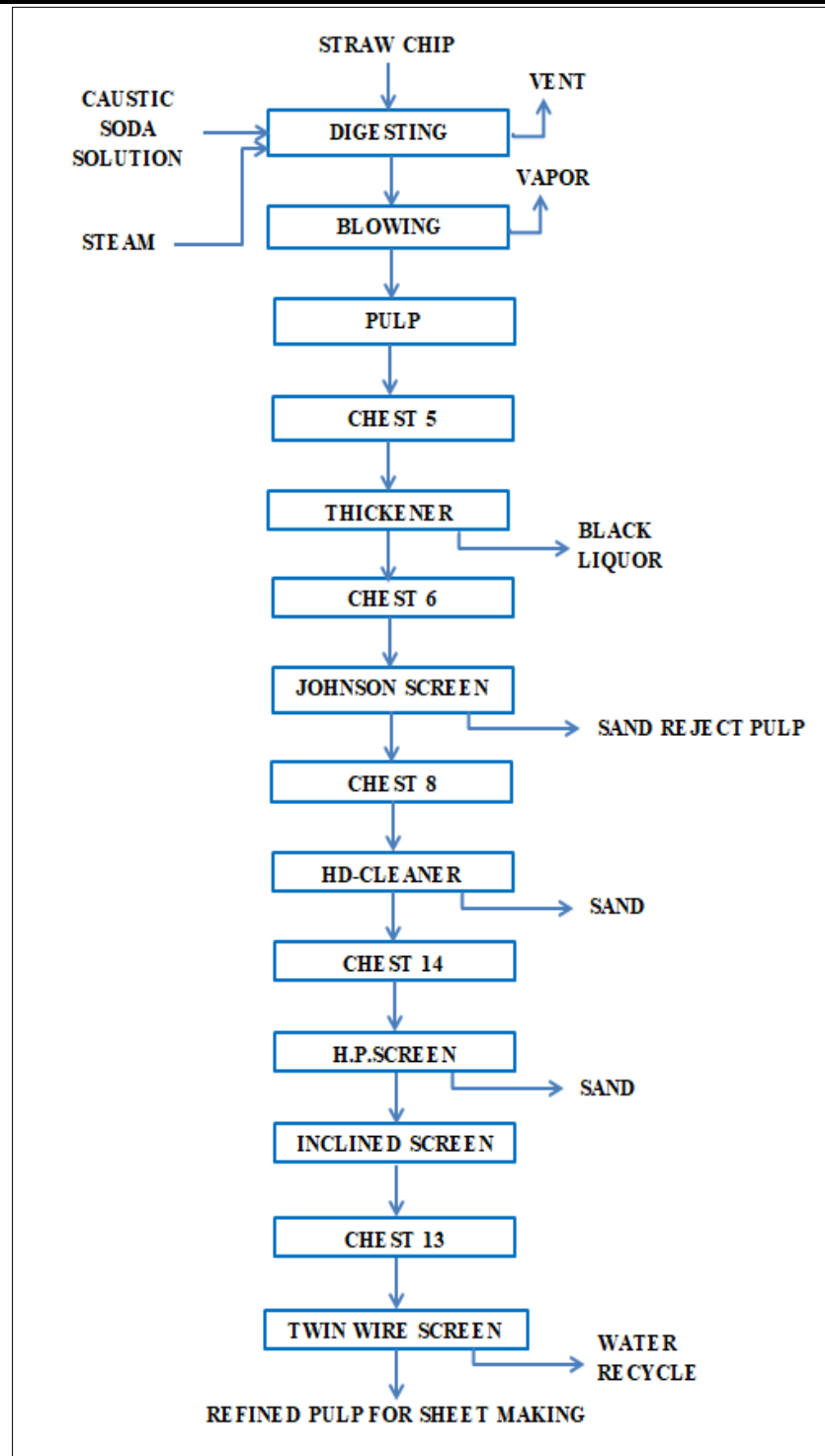


Figure 4-43-B: Preparation of Refined Pulp Fiber from Rice Straw

### Processing the pulp sheet from refined fibre

Processing the pulp sheet from refined fibre is 3<sup>rd</sup> step in pulp sheet (unbleached) production and it is shown as *figure 4-43-C*.

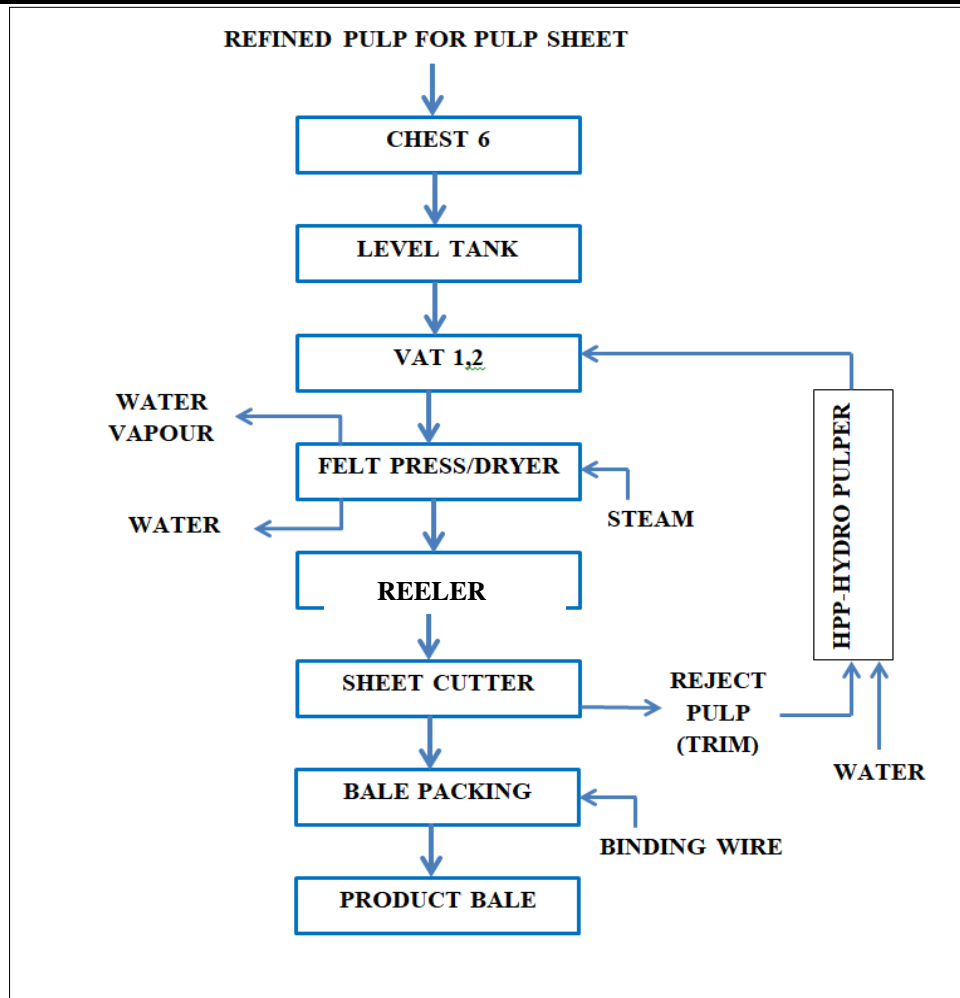


Figure 4-43-C: Processing the Pulp Sheets from the Refined Fibre

There is also mentioned the production procedure as machineries flow diagram at *Figure 4-44*.



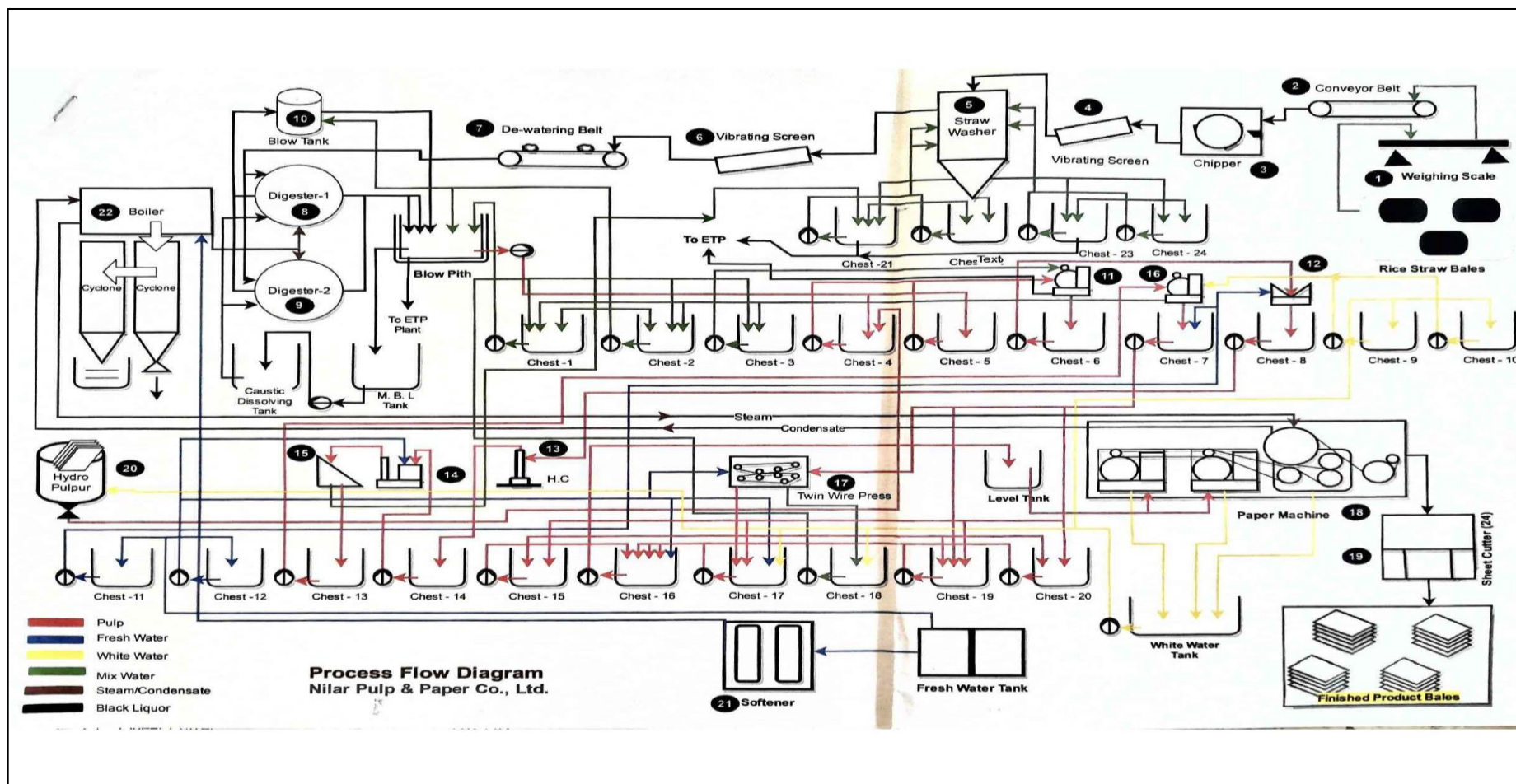


Figure 4-44: Process Flow Diagram

#### **4.7 Factory Machine Layout Plan**

The machine layout plan of this factory is shown in *Figure 4-45*. These machines are:

**Table 4.1 List of Machineries**

<b>Pulp Making Machines</b>		<b>References</b>
1	Straw Weighing Scale	<i>Figure 4-46</i>
2	Straw Conveyor	<i>Figure 4-47</i>
3	Straw Chipper	<i>Figure 4-48</i>
4	Vibrating Screen [to remove under size of rice straw (dry)] - the undersized solids from the vibrating screen	<i>Figure 4-49</i> <i>Figure 4-49 (a)</i>
5	Wash Water Tank	
6	Straw Washer	<i>Figure 4-50</i>
7	Vibrating Screen [to remove under size of rice straw (wet)]	<i>Figure 4-51</i>
8	Dewatering Conveyor	<i>Figure 4-52</i>
9	Digester (1,2)	<i>Figure 4-53</i>
10	Blow Pit	<i>Figure 4-54</i>
11	Caustic Dissolving Tank	<i>Figure 4-55</i>
12	Chest	<i>Figure 4-56</i>
13	Thickener	<i>Figure 4-57</i>
14	Johnson Screen	<i>Figure 4-58</i>
15	HD Cleaner	<i>Figure 4-59</i>
16	High Pressure Screen	<i>Figure 4-60</i>
17	Incline Washer	<i>Figure 4-61</i>
18	Twin Wire	<i>Figure 4-62</i>
19	Level Tank	<i>Figure 4-63</i>
20	Vat (1,2)	<i>Figure 4-64</i>
21	White Water Tank	<i>Figure 4-65</i>
22	Dryer	<i>Figure 4-66</i>
23	Reeler	<i>Figure 4-67</i>
24	Sheet Cutter	<i>Figure 4-68</i>
25	Bale Packer	<i>Figure 4-69</i>
<b>Supporting Machines</b>		
1	The Straw Bale Making Machine	<i>Figure 4-70</i>
2	Trolley	<i>Figure 4-71</i>
3	Boiler	<i>Figure 4-72</i>
4	Boiler Feed Water Treatment Plant	<i>Figure 4-73</i>
5	Finished Bale Making Machine	<i>Figure 4-74</i>

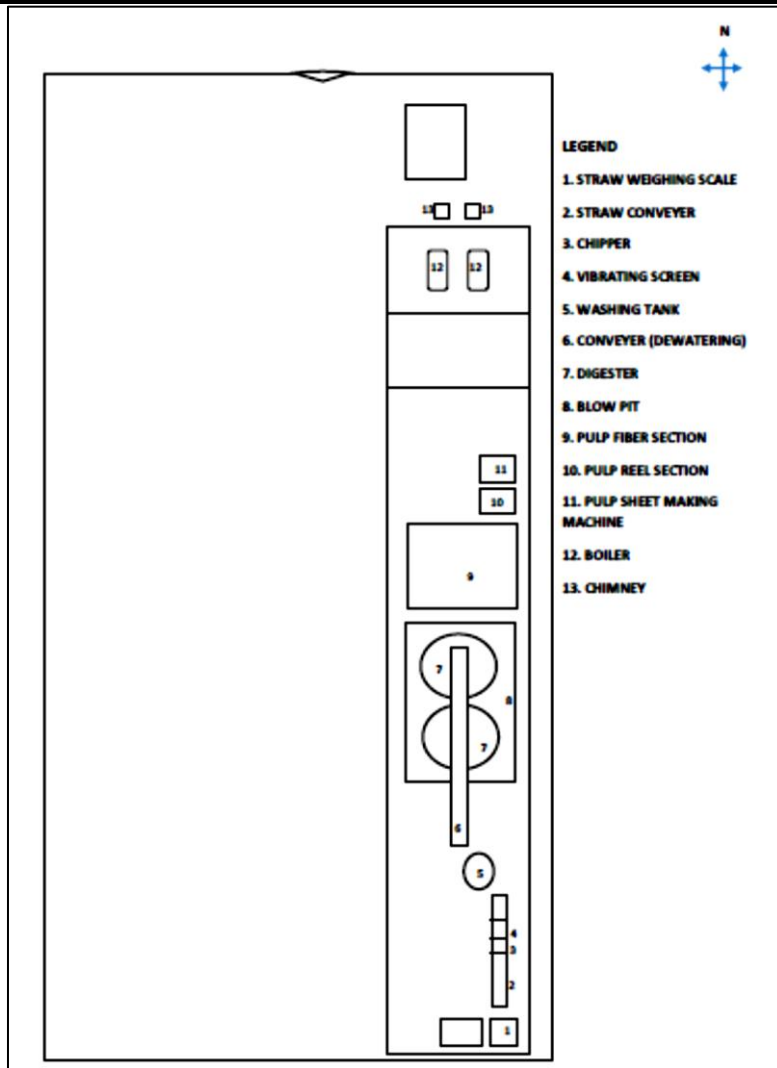


Figure 4-45: Machine Layout Plan



Figure 4-46: Straw Weighing Scale



**Figure 4-47: Straw Conveyor**



**Figure 4-48: Straw Chipper**



**Figure 4-49: Vibrating Screen (Dry)**



**Figure 4-49 (a): Undersized Solids from the Vibrating Screen**





**Figure 4-50: Straw Washer**



**Figure 4-51: Vibrating Screen (Wet)**



**Figure 4-52: Dewatering Conveyor**



**Digester-1**

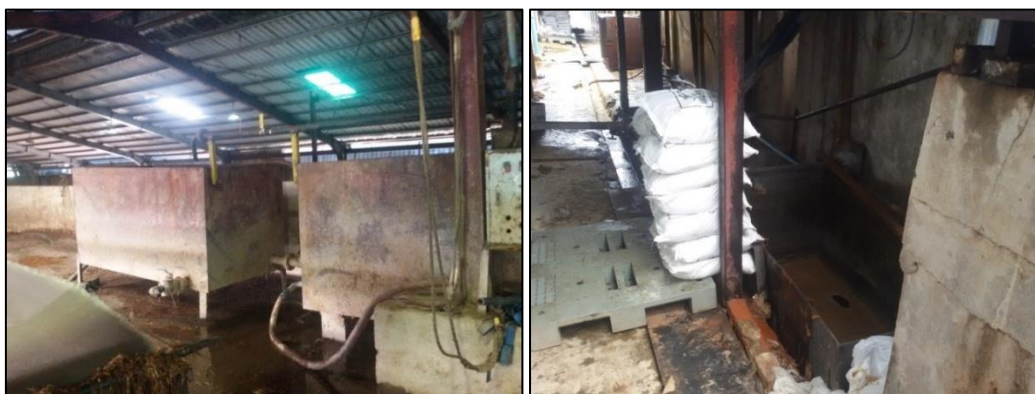


**Digester-2**

**Figure 4-53: Digesters**



**Figure 4-54: Blow Pit**



**Figure 4-55: Caustic Soda Dissolving Tank**



**Figure 4-56: Chest**



**Figure 4-57: Thickener**



**Figure 4-58: JohnsonScreen**



**Figure 4-59: H.D Cleaner**





**Figure 4-60: High Pressure Screen**



**Figure 4-61: Inclined Washer**



**Figure 4-62: Twin Wire**





**Figure 4-63: Level Tank**



**Vat-1**

**Vat-2**

**Figure 4-64: Vat-1 and Vat-2**



**Figure 4-65: White Water Tank**



**Figure 4-66: Dryer**



**Figure 4-67: Pulp Reeler**



**Figure 4-68: Pulp Sheet Cutter**



**Figure 4-69: Bale Packer**

As the supporting machines, the straw bale making machine is shown in *Figure 4-70*; the trolley is shown in *Figure 4-71*; the boiler is shown in *Figure 4-72*; the boiler feed water treatment plant is shown in *Figure 4-73*; and the finished bale making machine is shown in *Figure 4-74*. The capacity of machines is shown as attach.



**Figure 4-70: Straw Bale Making Machine**



**Figure 4-71: The Trolley**



**Figure 4-72: The Boiler**





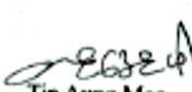
**Figure 4-73: Boiler Feed Water Treatment Plant**




**Figure 4-74: Bale Making Machine**

Date - 25.1.2018

No.	Machine	Capacity
1	Boiler	
	Indian Boiler	4.5 MT
	Chinese Boiler	4 MT
2	Digester 1 ( 3 Cooks / Day )	25m3
3	Digester 2 ( 4 Cooks / Day )	25m3
4	Cyclone (evaporate)	
5	Twin Wire	10 T/D
6	High Pressure Screen	15-20 T/D
7	Hydra Pulper (Broke Pulper)	5m3
8	Dewatering Conveyor	
9	Vibrating Screen	10 T/D
10	Straw Washer	2 T/ hr
11	Thickener	15t / day
12	Straw Chipper	2 T / hr
13	Vibrating Screen	2 T / hr
14	Straw Conveyor	
15	Softanner	4m3 / H
16	Johnson	10 T/D
17	H.C Cleaner	10-20 T / D
18	Incline	
19	Vat 1 (Cylinder)	Dia - 1.5M, L - 2.5 M
20	Vat 2 (Cylinder)	Dia - 1.5M, L - 2.5 M
21	Drying	Dia - 1.5M, L - 2.4 M
22	Reeler	Dia - 1.5M, L - 2.5 M
23	Sheet Cutter	10 T/D
24	Boiler Cyclone	
25	Boiler Cyclone	
26	Incline	

  
**Tin Aung Moe**  
 Factory Manager  
 Nilar Pulp & Paper Co., Ltd.

  
**MOZAMMEL HOSSAIN**  
 M & E MANAGER  
 NILAR ALLIANCE CO., LTD.

List of Machine Capacities

**4.8 List of Employees, Working Hours and Social Welfares**

There are 121-permanent male-workers and the 9-permanent female-workers.

**Table 4.2 List of Employees**

Department	Male	Female	Total	Remark		
Office	9	7	16			
General	6	1	7			
Production	106	1	107	Shift 1; 35 male	Shift 2; 35 male	Shift 3; 36 male
Security	6	-	6	They are not included in the worker list of this factory		
Total			130			
Working hours – Office, General, Production female 8hrs/day 6 days a week – [08:00 – 16:00]						
Production – Three shift 08:00 – 16:00 8 hours/day (all male workers) 16:00 – 24:00 6 days/week 00:00 – 08:00						

**Working Hours**

**Working days**

Monday to Saturday

**Holidays**

Sunday and Gazette Holidays

**No. of shifts per day**

Three

**Working days per year**

$52 \times 6 - 30 = 282$  days

**Social Welfares**

**Transportation**

The ferry bus arrangement is provided for the employees who live in North Okalapa, Tamwe, and Thakata

**Accommodation and Meals**

The hostels and meal for the employees from the distance

**4.9 Working Hours, Working Days on Monthly and Yearly**

Daily working hours and monthly and yearly working days are as follow:

Department	Working hours	Working days per week	Monthly working days	Yearly working days
Office	8 hours Monday to Saturday	6	24 ~ 30	240 ~ 320



Production	8 hours in shift 6 days a week	6	24 ~ 30	240 ~ 320
------------	-----------------------------------	---	---------	-----------

#### 4.10 Products, Daily, Monthly, Yearly Production and By-products

Nilar Pulp and Paper Mill Factory produces the rice straw pulp sheets and there is no byproduct, daily, monthly, yearly production are estimated as follow:

Product Name	A/U	Daily Production	Monthly Production	Yearly Production	Remark
Rice Straw Pulp Sheet	ton	3 ~ 5	112.5	1350	Production depends on raw materials, electricity and market.

Annual production rate is about 1350 ton per year. (See *Figure 4-75*). There is no byproduct in this factory. The product bales are shown as *Figure 4-75*.



**Figure 4-75: Bales of Products**

#### 4.11 The Water Consumption per Year and the Source of Water

The water is used from the tube well (See *Figure 4-76*) in this factory. The daily water usage is 125,000 gallons. There are two water storage tanks (See *Figure 4-77*) having volume of 10,000 gallon each. The clean water from the boiler feed water treatment plant (See *Figure 4-78*) is used as the boiler feed water. There are two numbers of 6 inches tube wells and the depths are about 400 feet.

##### Water consumption with respect to staff and industry daily

	Water in gallon	Remark
Staff	2,500	For 130 person
Industry	122,500	



**Figure 4-76: The Tube Well and Tube Well Storage Tank**



**Figure 4-78: The Boiler Feed Water Treatment System**

#### **4.12 The Annual Energy Consumption**

##### **Electricity**

Source	Ministry of Electricity and Energy (Myanmar)
Transformer	500 kVA
Annual Consumption	800,000 kWh



**Boiler**

Fuel for Boiler                                      Rice husk and Saw dust

Annual Fuel Consumption                      2,800,000 kg

The energy consumption in brief is shown as follow.

**Summary of energy consumptions**

Sr.No.	Power	A/U	Quantity	Remark
1.	Electricity	kWh	800,000	
2.	Rice husk/saw dust	kg	2,800,000	Used in boiler

The electricity transformers and the control panels are shown in *Figure 4-79*.



**Figure 4-79: Transformer and the Control Panel**

**4.13 Management of the Waste Materials (Solid Wastes, Wastewater, Vapor) and the Emissions of the Waste Materials and the Disposal Procedure in Brief**

At **Nilar Pulp and Paper Co., Ltd (URSP Mill)**, the procedures of waste materials management are as following:

- ⌘ Emitted gas or vapor (emission to air)
- ⌘ Liquid wastes
- ⌘ Solid wastes

**Emitted gas, dust, particulate matter (emission to air);** They are combusted gas from exhaust of motor vehicle, electric generator, dust and particulate matter from straw loading, unloading, chipping, screening (rice straw preparation section), water and caustic soda vapor from digesters, vapor evolved from caustic soda dissolving in water, dust, particulate matter from rice husk/saw dust, vapor and odor from digester, dust, particulate matter, and combusted gases from boiler combusting chamber and chimney, vapor come out from kitchen by cooking. Being perfect condition of engine efficiency, renewing the engine oil in time, using good quality fuel, make the reduction of non-completecombusted gas

(carbon monoxide), carbon particle and sulfur dioxide. The normal combusted gas come out to atmosphere, are reduced by growing of carbon absorbed plants. Being good efficiency of dust collecting system (e.g. clean the dust suction line, clean the suction fan, etc.) makes reduction the dust and particulate matter in straw preparation section. After digestion process finishes, the slowly opening the vent valve of digester causes less hot vapor dispersion in atmosphere. By making the right ratio of fuel and air, complete combustion of saw dust/rice husk occurs in boiler and resulting less carbon monoxide and fire ash into atmosphere.

**Liquid waste or emission to water** - They are spillage of used engine oil, lubricant, battery acid when renew and transport; boiler blow-down water; reject regeneration salt solution from water treatment plant; wash water for straw; digester wastewater (i.e. low caustic concentration, high lignin content); washed water from pulp cleaning; spillage from pulp sheet making section; wastewater which emits from kitchen, office, laboratory, toilet and general use. By collecting, storing in systematic controlling the used engine oil, lubricant oil, battery acid became valuable and prevention of water pollution. Moreover, the straw wash water, digester waste, pulp wash water are larger amount and highly polluted by lignin. In **Nilar Pulp and Paper Co., Ltd (URSP Mill)**, the lignin containing waste was treated by processes which including anaerobic, clarification, aerobic, chemical coagulation process. Finally, the waste was treated by passing the hyacinth pond and discharged.

**Solid wastes or emission to soil** – They are undersized straw waste; the undersized pulp; packing materials of various raw materials such as caustic soda; rice husk/saw dust; pieces of binding wire; waste from maintenance section such as used sand paper; glove; scrap metal, etc.; rice husk/saw dust ash; empty cans of lubricants. Among them, some are valuable and sold; if not they are disposed under guideline of industrial zone committee and Yangon City Development Committee. There are two or three disposing times per week depending on the amounts of solid waste. Before disposing period the solid wastes are kept in trash bin with lid and ash from boiler is stored temporarily at the area with 4 side concrete walls. The images of trash bin and ash temporary stored area are shown as *Figure 4-80* and *Figure 4-81*.



**Figure 4-80: Trash Bin with Lid**



**Figure 4-81: Ash Temporary Stored Area**



## Green Myanmar

### Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
 Yangon, Myanmar  
 Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

Name of Client : Nilar Pulp and Paper Mill      Date of Arrival at Lab : 18.2.2018

Date of Collection : 15.2.2018      Date of Issue of Results : 28.2.2018

#### Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Wastewater	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			ရန်ကုန်မြို့	
1.	5-day Biochemical Oxygen Demand	kg/ADt	1176	0.7
2.	Chemical Oxygen Demand	kg/ADt	3130	10
3.	pH	-	13.1	6-9
4.	Total Suspended Solids	kg/ADt	1034	1

ND-Not Detected

ADt – Air dried metric ton

Analyzed By

**Daw Aye Thuzar Hein**  
 Technician (Laboratory)

Checked By

**Daw Wint Phyu Htway**  
 Incharge (Laboratory)

Approved By

**Daw Cherry Thwin**  
 Manager (Laboratory)



# Green Myanmar

## Environmental Services Co., Ltd

No. 115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
 Yangon, Myanmar  
 Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

**Name of Client : Nilar Pulp and Paper Mill**      **Date of Arrival at Lab : 6.8.2018**

**Date of Collection : 6.8.2018**

**Date of Issue of Results : 16.8.2018**

### Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Wastewater	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			Straw Wash Outlet	
1.	5-day Biochemical Oxygen Demand	kg/ADt	150	0.7
2.	Chemical Oxygen Demand	kg/ADt	300	10
3.	pH	-	7.6	6~9
4.	Total Suspended Solids	kg/ADt	169	1

ND-Not Detected

ADt – Air dried metric ton

**Analyzed By**

**Daw Aye Thuzar Hein**  
**Technician (Laboratory)**

**Checked By**

**Daw Wint Phyu Htway**  
**Incharge (Laboratory)**

**Approved By**

**Daw Cherry Thwin**  
**Manager (Laboratory)**







# Green Myanmar

## Environmental Services Co., Ltd

115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
 Yangon, Myanmar  
 Tel: 09-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

Name of Client: **Nilar Pulp and Paper Mill** Date of Arrival at Lab : **6.8.2018**

Date of Collection : **6.8.2018**

Date of Issue of Results : **16.8.2018**

### Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Wastewater	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			First Thickener Outlet	
1.	5-day Biochemical Oxygen Demand	kg/ADt	1050	<b>0.7</b>
2.	Chemical Oxygen Demand	kg/ADt	3778	<b>10</b>
3.	pH	-	10.2	<b>6-9</b>
4.	Total Suspended Solids	kg/ADt	952	<b>1</b>

ND-Not Detected

ADt – Air dried metric ton

Analyzed By

**Daw Aye Thuzar Hein**  
**Technician (Laboratory)**

Checked By

**Daw Wint Phyu Htway**  
**Incharge (Laboratory)**

Approved By

**Daw Cherry Thwin**  
**Manager (Laboratory)**



ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း  
Ecological Laboratory



စိမ်းလန်းအိမ်မွေ့ခြံတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ စာအမှတ်: EL-R / 02136

Date / දිනය: 28 February, 2018

## Laboratory Analysis Report / ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ

## Sample Profilesနမူနာများ

နမူနာအမည် /Sample Name	စွန့်ပစ်ရေ	နမူနာအမှတ်/ Sample ID	3444	
နေရာ (မြို့နယ် ) Location (Township)	အုပ်စစ်ပိကမ်း	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Division/State)	ရန်ကုန်	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် Sender Name	Nilar Pulp and Paper Mill (GMES)	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	15.2.2018	
အဖွဲ့အစည်း:Organisation	-	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	19.2.2018	
ဆက်သွယ်ရန် Contact	09253083501			

*(This laboratory analysis report is based solely on the sample submitted by the customer)*

(ဤဇာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

## Analysis Results စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ်အဖြေ Results		နည်းစဉ် Method	သောက်မှတ်ချက် Drinking Standard	စွန့်စေ့ စံနှုန်း Effluent Standard	မှတ်ချက် Remarks
၁	ချဉ်ဖန်ကိန်း (pH)	10.8		pH meters	6.5 – 8.5	6.0 – 9.0 *	In Base Range
၂	စီဝဆိုင်းရာ အောက်ဆီဂျင်လိုအပ်ချက် (BOD <sub>5</sub> )	4930	mg/L	Estimated by Eco-Lab with Jenway Dissolved Oxygen Meter (Model 970)	≤ 3 mg/L	≤ 50 mg/L *	Above the limits
၃	ဓာတ်ဆိုင်ရာ အောက်ဆီဂျင်လိုအပ်ချက် (COD)	>15000	mg/L	Lovibond SpectroDirect Method No. 130, 131, 132	NG	≤ 250 mg/L *	Above the limits

\* Myanmar Emission Guideline 2015

NG=No Guideline

ND= Not Detected

စမ်းသပ်ပြီး Tested by

စစ်ဆေးပြီး Checked by

တာဝန်ခံ Approved by

  
Daw May Myat Khine  
Lab. Technician II  
Ecological Laboratory  
**ALARM**

*Myat*  
Daw Lin Myat Myat Aung  
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**4.14 The Amount of Solid Waste Issued, Containing Substance and Management Procedure**

The amount of solid waste issued, containing substances and management procedure was as following:

**Solid Waste Issued, Containing Substances and Management Procedure**

**Annual Basis**

<b>Sr. No.</b>	<b>Solid Wastes</b>	<b>A/U</b>	<b>Quantity</b>	<b>Containing Substances</b>	<b>Management Procedure</b>
1.	<b>Packing material for raw material</b> - pieces of binding wire - empty caustic soda bag, common salt, rice husk/saw dust - empty containers of lubricants	kg bag pcs	10 500 10	Iron, Zinc Plastic, Printing Ink Plastic, Can, Paint, Left lubricant	Disposed by guideline of industrial zone committee and Y.C.D.C
2.	<b>From office work</b> - Bulband lamp (used, broken, damage) - Used stationery (used paper, tonner, ball pen, correction pen)	pcs bulk	10 1	Glass, Metal Plastic, Metal, Paper	Disposed by guideline of industrial zone committee and Y.C.D.C
3.	<b>Debris from kitchen</b> - Packing material for meat and vegetable, food, waste	bulk	1	Plastic, Food, Meat, Vegetable, Oil	Disposed by guideline of industrial zone committee and Y.C.D.C
4.	<b>Waste from maintenance section</b> - Used sandpaper, glove, scrap metal, piece of welding electrode	bulk	1	Paper, Cloth, Rubber, Metal	Disposed by guideline of industrial zone committee and Y.C.D.C

**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

5.	<b>Used parts from vehicle</b> - Used tire and tube - Used battery	Nos.	10 5	Rubber Sulfuric acid, Plastic, lead compounds	Disposed by guideline of industrial zone committee and Y.C.D.C
6.	<b>Debris from laboratory</b> - Broken glassware - Packing of chemicals - Filter paper - Ash	bulk	1	Glass, Paper	Disposed by guideline of industrial zone committee and Y.C.D.C
7.	<b>Waste in Process</b> - Undersized straw particle - Undersized pulp - Sand, dust - Rice husk/ saw dust ash	bulk	1	Straw, Dust, Sand, Lignin, Carbon	Fire in combustion chamber and ash is disposed by guideline of industrial zone committee and Y.C.D.C

**4.15 Amount of effluent and wastewater, ingredients and management procedure**

The estimated amount of effluent and wastewater, containing substances and management procedure of **Nilar Pulp and Paper Co., Ltd (URSP Mill)** are as following:

Daily

Sr. No.	Wastewater	A/U	Quantity	Containing Substances	Management Procedure
1.	Effluents from sanitation by employee	gallon	2500	Urine, Feces	Decompose naturally in septic tank
2.	Effluents from kitchen	gallon	50	Oil, Food	Good house-keeping
3.	Boiler blow-down water	gallon	150	Minerals, Salt	Good house-keeping
4.	Spillage	gallon	small	Engine oil, lubricant, battery acid	Wipe out and neutralize with lime





**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

5.	Regeneration and Reject water from water treatment plant	gallon	1000	Salt solution, Minerals	Good house-keeping
6.	Wastewater from process				
	Straw wash	gallon	57,400	Sand, Dust	Treated and reused
	Pulp wash	gallon	48,650	Lignin, Sand	Treated and reused
	Digester water	gallon	12,250	Lignin, Caustic Soda	Treated and discharged

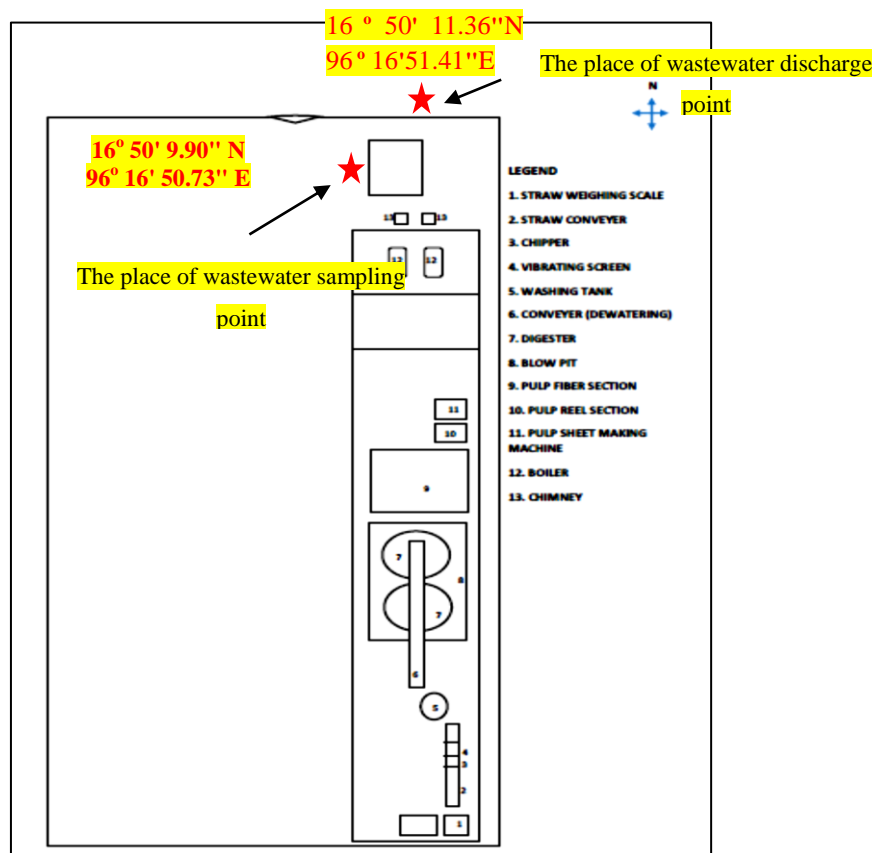
Detail procedure for wastewater management is shown in *Section 6.3*. The wastewater disposing point, treatment procedure and recycle processes are stated as following in brief.

(a) The place of waste water sampling is shown at *Figure 4-82*

(b) Treatment procedure is shown at *Figure 4-83*

(c) Recycling water usage are

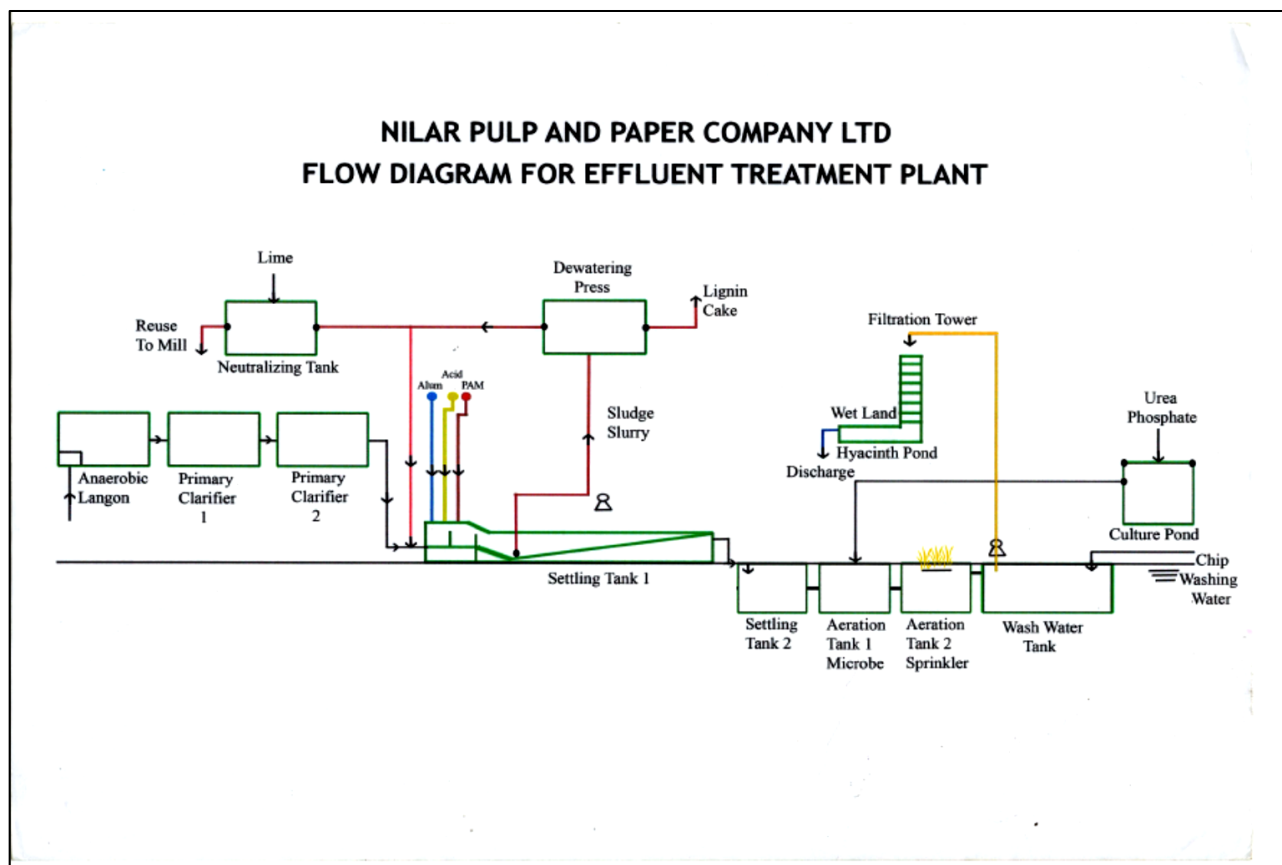
- White water is as dissolving water for caustic
- Washed water of rice straw is treated and reused



**Figure 4-82: Wastewater Sampling Point and Discharge Point**



The wastewater quality was analyzed at 28.2.2018 and it was reported on 13.2.2019. At that time the parameter of wastewater was analyzed in 4 items instead of 6 items (referring to 2.3.3.3 NEQ (E) G: Unbleached kraft pulp, integrated) and to fulfill this requirement (ECD command also) the waste samples are taken at 2020 and analyzed results are as follow. The photo of sample taking, place of sampling and comparison of analyzed result with NEQ (E) G are mentioned as the facts about the wastewater in details are described at section 6.3.



**Figure 4-83: Wastewater Treatment Flowchart**

#### **4.16 Amount of Hazardous Waste, Containing Substances and Management Procedure**

Amount of hazardous waste, containing substances and management procedure of **Nilar Pulp and Paper Co., Ltd (URSP Mill)** are shown in following table.

#### **Amount of Hazardous Waste, Containing Substances and Management Procedure**

**Annual Basis**

<b>Sr. No.</b>	<b>Hazardous Wastes</b>	<b>A/U</b>	<b>Quantity</b>	<b>Containing Substances</b>	<b>Management Procedure</b>
1.	Used and broken light bulb and lamp	bulk	1	Glass, Metal	Disposed by guideline of industrial zone committee and YCDC
2.	Used battery	pcs	5	Lead compound, Plastic, Rubber, Sulfuric acid	Sold, if not disposed by guideline of industrial zone committee and YCDC
3.	Wastewater	gallon	35,306,400	Lignin, Caustic, Pulp (high BOD, COD, TSS)	Treated in wastewater treatment plant

#### **4.17 Storm Water and Drainage System**

The storm water and drainage system of said factory is shown as following *Figure 4-84*.

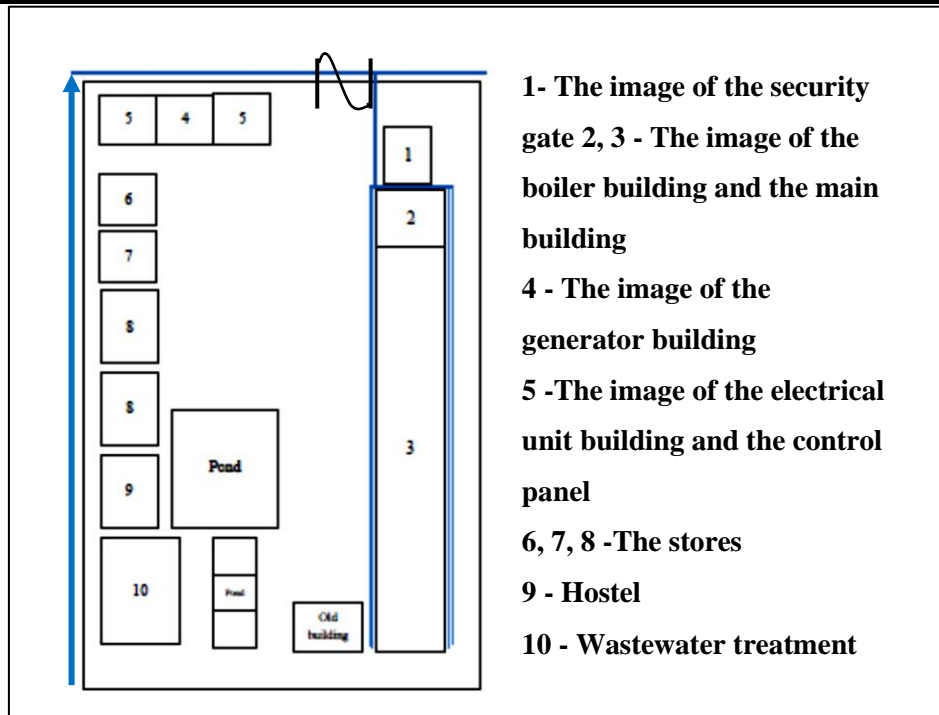


Figure 4-84: Storm Water Drainage System

#### 4.18 Water Distribution System

Daily water consumption of **URSP Mill** is about 125,000 gallons and mainly used for preparation of caustic soda solution; cleaning of tank and machineries; washing of straw and pulp; and providing boiler feed water, drinking water and other domestic uses. Before distribution, the tube well water is treated with sand, and resin. Water distribution system of the said factory is shown in the following *Figure 4-85*.

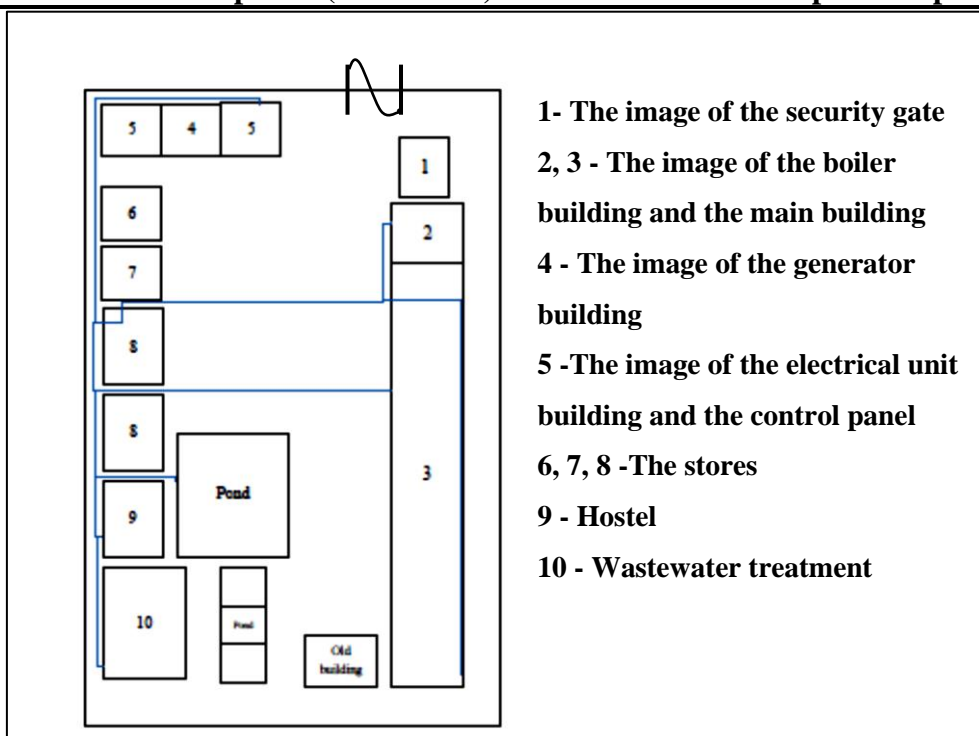


Figure 4-85: Water Distribution System

#### 4.19 Road Transportation

The transportation of raw materials and finished goods and ferry bus system for URSP Mill employees have been arranged as follows.

Table 4.3 Transportation arrangement

Sr. No.	Commodities	From	To	Transport by	Remark
1.	Straw	Thongwa, Khayan, Yangon Division	Factory	Motor Vehicle	
2.	Caustic soda	Yangon	Factory	Motor Vehicle	
3.	Rice husk/saw dust	Yangon	Factory	Motor Vehicle	
4.	Binding wire	Yangon	Factory	Motor Vehicle	
5.	Pulp sheet	Factory	Port	Motor Vehicle	
6.	Ferry	North Okala Tamwe Tharkata Factory	Factory  North Okala Tamwe Tharkata	Motor Vehicle	

#### 4.20 Certificates, Licences and Instructions Conducted by Nilar Pulp and Paper Co., Ltd (URSP Mill) and Responsible Person for E.M.P and Budget Allotment

Nilar Pulp and Paper Co., Ltd (URSP Mill) conducts the certificates, licences and instructions are mention at Appendix I.

#### Certificates, Licences and Instructions Conducted by Nilar Pulp and Paper Co., Ltd. (URSP Mill) and Responsible Rerson for E.M.P Report and Budget Allotment

Sr. No.	Description
1.	<p><b>Permits and Certificates</b></p> <p><b>Certificate of boiler utilization</b></p> <p>-Registration No. of boiler                      MASA – 4726</p> <p>Type of boiler horizontal tube, China ( Manufacture date -2000)</p> <p>Allowable steam pressure                      9.5 kg/cm<sup>2</sup></p> <p>Duration time    16.7.2019 to 15.7.2020</p> <p>-Registration No. of boiler                      MASA – 5308</p> <p>Type of boiler    horizontal tube, India (Manufacture date -2014)</p> <p>Allowable steam pressure                      10.54 kg/cm<sup>2</sup></p> <p>Duration time    14.8.2019 to 13.8.2020</p> <p><b>Certificate of Incorporation</b></p> <p>-Company registration                              No. 116653362</p> <p>(Former registration                              No. 3882/2011-2012)</p>

	<p><b>Certificate of Exporter/ Importer Registration</b></p> <p>-Registration No. 27679 (19.03.12)</p> <p>Start date 15.02.2020</p> <p>End date 14.02.2025</p> <p>(Registration is still extension)</p> <p><b>Private Industries Registration</b></p> <p>- Registration No. YAKA/KYEE/1819</p> <p>Registration life expired date 30.9.2020</p> <p><b>Issuing the registration certificate for utilization of 400V, 625kVA electric generator</b></p> <p><b>Safety Certificate for Utilization of Electricity</b></p> <p>-Certificate No. E.I/YD 452/1-2019</p> <p>Expired date of certificate 26.1.2021</p> <p>(Registration is still extension)</p> <p><b>Licence for enterprise of chemicals and related substances</b></p> <p>-Licence No. 000138 (Rule 8)</p> <p>Form 2 no.of enterprise (8) Nos.</p> <p>Expired date of licence 19.11.2020</p> <p><b>Registration of chemicals and relative substances</b></p> <p>-Registration No. 000081 (27)</p> <p>Form 1 no.of enterprise (1) No.</p> <p>Expired date of Registration 27.11.2020</p> <p><b>Certificate of membership (The Republic of The Union of Myanmar Federation of Chambers of Commerce and Industry)</b></p> <p>-Membership No. &amp; Date 23722 (8.3.2012)</p> <p>Extended Period From 1.1.2019 to 31.12.2021</p> <p><b>Yangon City Development Committee</b></p> <p>-Licence of enterprise for Financial year (20.9.2020)</p> <p>Expired date 30, September, 2020.</p>
--	---

	<p>Licence No. 072220045</p> <p><b>Recommendation Certificate for Health and Safety</b></p> <p>-Issued by Yangon City Development Committee</p> <p>From 1.10.2019 to 31.9.2020</p>
2.	<p><b>Material Safety Data Steets</b></p> <p>Caustic Soda</p> <p>Common Salt</p> <p>Lubricant</p> <p>Diesel</p> <p>Battery Acid</p>
3.	<p><b>Budget Estimation for Decommissioning, Mitigation Measure of current impacts and Environmental Social Monitoring, Safe and Health Care and Reducing Carbon</b></p> <p>Budget estimation for decommissioning - 117,850,000 MMK</p> <p>Budget estimation for mitigation measure of environmental impact - 4,920,000 MMK</p> <p>Budget estimation of environmental social monitoring, safe and health care, and reducing carbon - 11,700,000 MMK</p>
4.	<p><b>Responsible Person for Environmental Management Plan Report (Communicable Person)</b></p> <p>Name - U Tin Aung Moe</p> <p>Designation - Factory Manager</p> <p>Contact phon no. - 09-977212013</p>





Dagon Myot Thit (Seikkan) Township consists of 35 Wards and 4 Village groups. The area, having 792.645 acres, was built as Industrial Zone (1) and the area, having 416.15 acres, was built as Industrial Zone (2). **URSP Mill** is situated in the Industrial Zone (1).

### **Location, area and study Area**

Dagon Myot Thit (Seikkan) Township is situated at North Latitude 16° 46' ~ 16° 49' and East Longitude 96°11' ~ 96°13' and the length from the east to the west is 4 miles long and the length from the south to the north is 13.25 miles long. The total area of Township is 32.97 square miles. The study area for regional facts is in the boundary of Dagon Myot Thit (Seikkan) Township.

#### **Boundary**

In the east and the south	Thanlyin Township, Yangon South District
In the south	Tharkayta Township, Yangon East District
In the west and	Dagon Myot Thit Township (South) Township
In the north	Dagon Myot Thit Township (South) Township and Hlegu Township, Yangon North District.

### **Topography**

Dagon Myot Thit (Seikkan) Township is the plain and is situated 14.4 feet above the sea level. The Bago River passes through in the east.

### **Land Use**

In Dagon Myot Thit (Seikkan) Township, the usage areas of various land types are described as follow:

**Table 5.1 Land Use of Dagon Myot Thit (Seikkan) Township**

<b>Sr. No.</b>	<b>Types of Land</b>	<b>Area (in acres)</b>
1.	Total net area for harvesting (A) The area of fields (B) Farm land (C) Kyun land (D) Garden land (E) Nipa palm	6665 5937 - - 476 252
2.	Total area of fallow land (A) The field areas (B) Farm land (C) Kyun land (D) Garden land (E) Nipa palm	14887 - - - -
3.	Grazing land	-

4.	Land for industrial use	563
5.	City land	14148
6.	Village land	140
7.	Other land	36
8.	Protected forest reserve area	-
9.	Wild land area	-
10.	Wasteland area	-
11.	The land area that cannot harvest	913
Total		

## **Drain**

Dagon Myot Thit (Seikkan) Township is the region of less river/stream and the distinct river is the Bago River. The Bago River is freshwater/saltwater river and this river water can be used for agriculture and drinking. The small ships/motor boats can go in the Bago River.

## **5.2 Climate and Environment**

### **5.2.1 Climate**

Dagon Myot Thit (Seikkan) Township has the warm and wet climate and the highest temperature is 42°C and the lowest temperature is 16°C. The annual rainfalls and the temperatures are tabulated below.

**Table 5.2 Rainfall and Temperature**

Sr. No.	Year	Rainfall		Temperature(°C)		Remark
		No. of raining days	Total rainfall (inch)	Summer Season	Winter Season	
1.	2011	60	170.5	37	18	
2.	2012	58	180.2	42	16	
3.	2013	65	190.01	45	15	
4.	2014	59	187.5	42	18	
5.	2015	118	102.5	40	12.5	
6.	2016	110	105.27	45	15	
7.	2017	80	100.2	31	23	

### **5.2.2 The Soil Quality**

To analyze the ambient soil qualities of **URSP Mill**, the soil sample from the empty space between the main building and the store was taken on 15<sup>th</sup> February 2018. *Aluminum* and *Chloride* were present but *Arsenic*, *Cyanide* and *Manganese* were not found in this soil sample. These results were recorded as the base-line values and should be superimposed by the next results. The photos of taking soil sample are shown in *Figure 5-2*, and the location of sampling point is shown in

Figure 5-3.



Figure 5-2: Soil Sampling

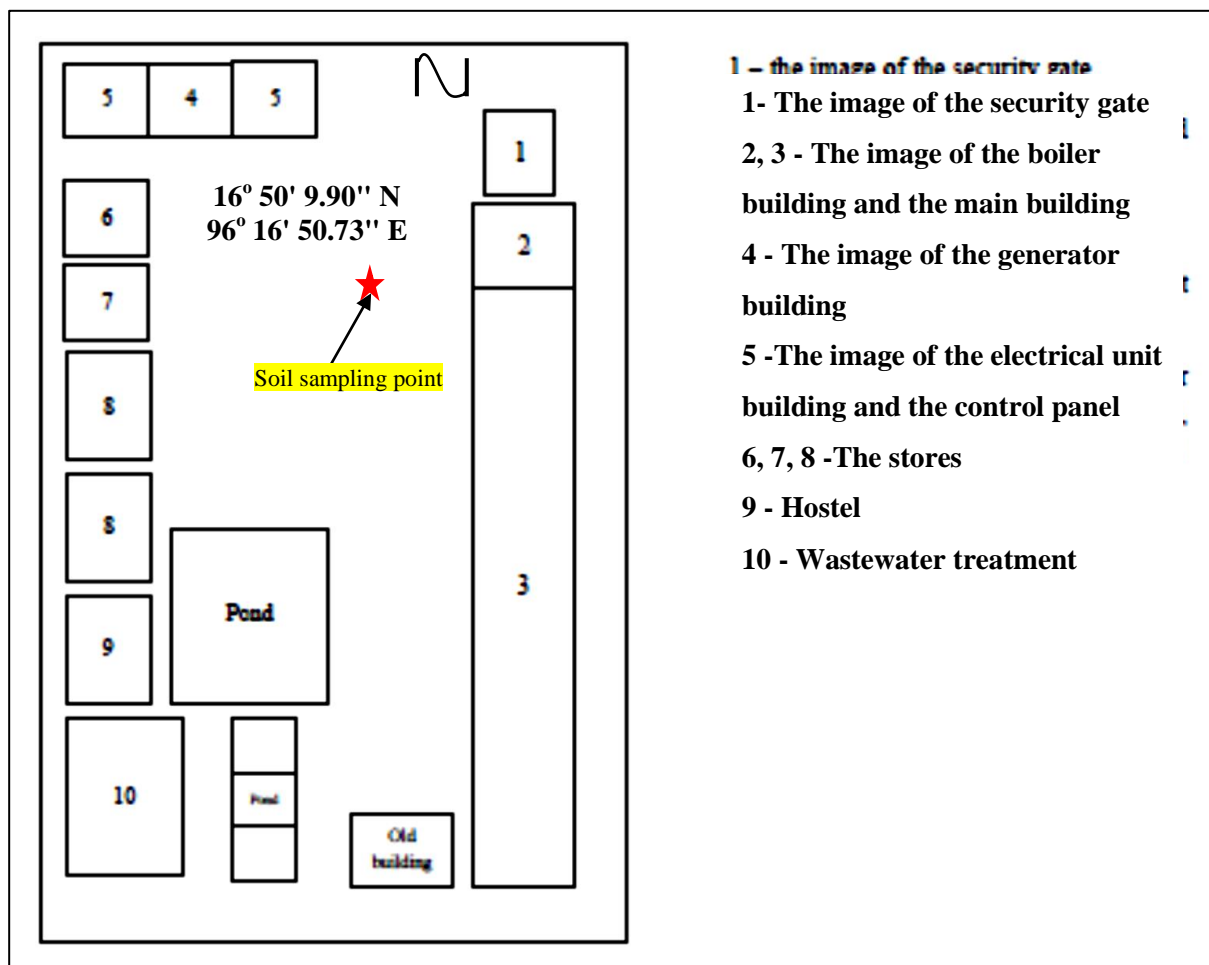


Figure 5-3: Soil Sampling Point



## Green Myanmar

### Environmental Services Co., Ltd

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 Yangon, Myanmar  
 Tel: 011-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

**Name of Client : Nilar Pulp and Paper Mill      Date of Arrival at Lab : 18.2.2018**

**Date of Collection : 15.2.2018      Date of Issue of Results : 28.2.2018**

#### Laboratory Analysis Results of Soils

Sr. No.	Parameters	Unit	Analysis Value
			စက်မှုအတွင်းဝေကြေးနမူနာ
1.	Aluminum	mg/kg soil	0.1
2.	Arsenic	mg/kg soil	ND
3.	Chloride	g/kg soil	0.135
4.	Copper	g/kg soil	ND
5.	Cyanide	mg/kg soil	ND
6.	Extractable Acidity	cmol/kg soil	2
7.	Manganese (Mn)	g/kg soil	ND
8.	P - Alkalinity	mmol/l extract	0
9.	pH	-	7.88
10.	Total Alkalinity	mmol/l extract	4.24
11.	Total Iron	g/kg soil	0.025

*ND-Not Detected*


**Analyzed By**

  
**Daw Aye Thuzar Hein**  
 Technician (Laboratory)

**Checked By**

  
**Daw Wint Phyu Htway**  
 Incharge (Laboratory)

**Approved By**

  
**Daw Cherry Thwin**  
 Manager (Laboratory)

### 5.2.3 Surface Water and Groundwater Qualities

There are two samples of water as surface water and groundwater. First is drain water in front of factory and second is tube well water. To be analyze the water qualities of **USRP Mill**, the drain water in front of this factory was sampled on 15<sup>th</sup> February 2018 and analyzed in GMES laboratory and some parameters were



measured in ecological laboratory for comparison.

The results of the drain water in front of **URSP Mill** were compared with the **Guidelines of Pulp and Paper Mills** in the *National Environmental Quality (Emission) Guidelines*. The value of  $BOD_5$  was about **1064kg/ADt** and the standard value is **0.7kg/ADt** and so thus, the amount was more than **1063.3kg/ADt**. The value of  $COD$  was about **2290gk/ADt** and the standard value is **10kg/ADt** and so thus, the amount was more than **2280kg/ADt**. The value of  $pH$  was about **14** and the standard value is **6~9** and the amount was more than the standard value. The value of *Total Suspended Solids* was about **699kg/ADt** and the standard value is **1kg/ADt** and the amount was more than **698kg/ADt**.

The photos of drain water sampling are shown in *Figure 5-4*; and the location of sampling point is shown in *Figure 5-5*.



**Figure 5-4: Taking Drain Water Sample**

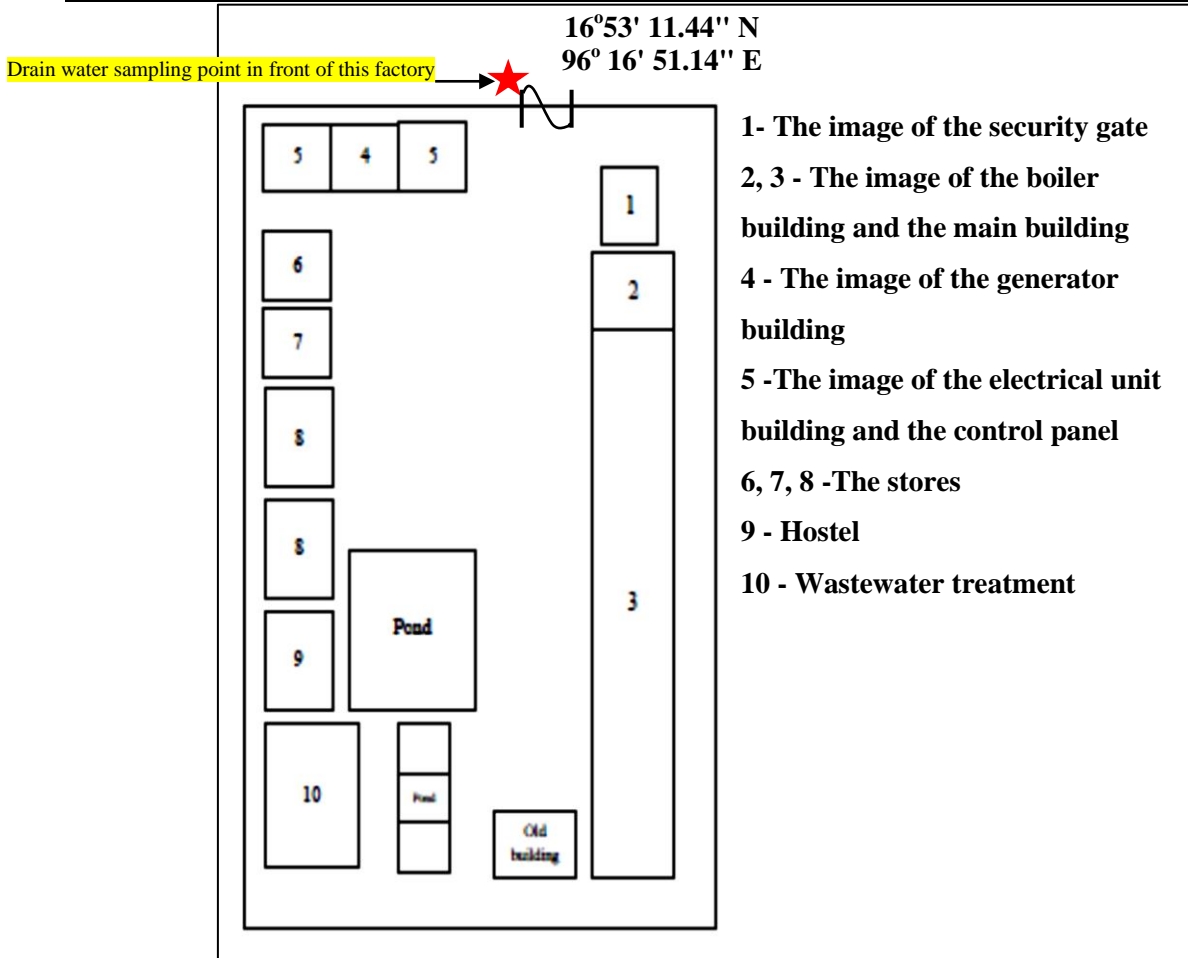


Figure 5-5: Drain Water Sampling Point



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**Name of Client : Nilar Pulp and Paper Mill**      **Date of Arrival at Lab : 18.2.2018**

**Date of Collection : 15.2.2018**

**Date of Issue of Results : 28.2.2018**

### Laboratory Analysis Results of Surface Water

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Surface Water	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			စက်ရုံရှေ့ ခြေဘင်းခဲ	
1.	5-day Biochemical Oxygen Demand	kg/ADt	1064	0.7
2.	Chemical Oxygen Demand	kg/ADt	2290	10
3.	pH	-	13	6-9
4.	Total Suspended Solids	kg/ADt	699	1

ND-Not Detected

ADt - Air dried metric ton

**Analyzed By**

**Daw Aye Thuzar Hein**  
**Technician (Laboratory)**

**Checked By**

**Daw Wint Phyu Htway**  
**Incharge (Laboratory)**

**Approved By**

**Daw Cherry Thwin**  
**Manager (Laboratory)**



**Table 5.3 Comparison Data of Analyzed Results of Surface water(In Front of factory Drain water) with Guideline Values of Pulp and Paper Mill (Unbleached Kraft Pulp, Intigrated)under National Environmental Quality (Emission) Guidelines Standards**

Sr. No.	Parameter	Unit	Analysis result of Surface water (In Front of factory Drain water)	Guideline Values of Pulp and Paper Mill (Unbleached Kraft Pulp, Intigrated)	Less/More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	1064	0.7	+ 1063.03	
2.	Chemical Oxygen Demand	Kg/ADt	2290	10	+ 2280	
3.	pH	-	13	6~9	Over range	
4.	Total Suspended Solids	Kg/ADt	699	1	+ 698	



**ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း**  
**Ecological Laboratory**



စိမ်းလန်းအသိမြှင့်တင်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ စာအမှတ်: EL-R / 02135

Date / ရက်စွဲ: 28 February, 2018

**Laboratory Analysis Report /ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ**

**Sample Profilesနမူနာရာဇဝင်**

နမူနာအမည် / Sample Name	စက်ရုံရှေ့မြောင်းရေ	နမူနာအမှတ် / Sample ID	3443
နေရာ (မြို့နယ်) Location (Township)	ဒဂုံဆိပ်ကမ်း	လတ္တီတွဒ် Latitude	
နေရာ (တိုင်း/ပြည်နယ်) Location (Division/State)	ရန်ကုန်	လောင်ဂျီတွဒ် Longitude	
ပေးပို့သူအမည် Sender Name	Nilar Pulp and Paper Mill (GMES)	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	15.2.2018
အဖွဲ့အစည်း Organisation	-		
ဆက်သွယ်ရန် Contact	09253083501	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	19.2.2018

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

**Analysis Results စမ်းသပ်ချက်အဖြေ**

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ်အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	စွန့်ထုတ် စံနှုန်း Effluent Standard	မှတ်ချက် Remarks
၁	ရေဗေဒနိရိုက် (pH)	10.4	pH meters	6.5 – 8.5	6.0 – 9.0 *	In Base Range
၂	ဇီဝဆိုင်ရာ အောက်ဆီဂျင်လိုအပ်ချက် (BOD <sub>5</sub> )	3748 mg/L	Estimated by Eco-Lab with Jenway Dissolved Oxygen Meter (Model 970)	≤ 3 mg/L	≤ 50 mg/L *	Above the limits
၃	ဓာတ်ဆိုင်ရာ အောက်ဆီဂျင်လိုအပ်ချက် (COD)	>15000 mg/L	Lovibond SpectroDirect Method No. 130, 131, 132	NG	≤ 250 mg/L *	Above the limits

\* Myanmar Emission Guideline 2015

NG=No Guideline

ND= Not Detected

စမ်းသပ်ပြီး Tested by

စစ်ဆေးပြီး Checked by

တာဝန်ခံ Approved by

**Daw May Myat Khine**  
 Lab. Technician II  
 Ecological Laboratory  
 ALARM

**Daw Lin Myat Myat Aung**  
 Lab. Technician I  
 Ecological Laboratory  
 ALARM

**Dr. Aye Aye Win**  
 Project Team Leader  
 Ecological Laboratory  
 ALARM

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In **URSP Mill**, the factory's tube well water is used as the water for washing the rice straw and pulp; the boiler feed water; and the domestic water for employees. Tube well water is treated in water treatment plant and treated water is used as drinking and boiler feed water. The samples of tube-well water and the drinking water were taken on 15<sup>th</sup> February, 2018 and analyzed in GMES laboratory and some parameters are analyzed in ecological



laboratory.

The photos of taking tube-well water samples are shown in *Figure 5-6*; the photos of drinking water sampling are shown in *Figure 5-7*. Sampling place with coordinate marks are shown as Figure 5-7-1.

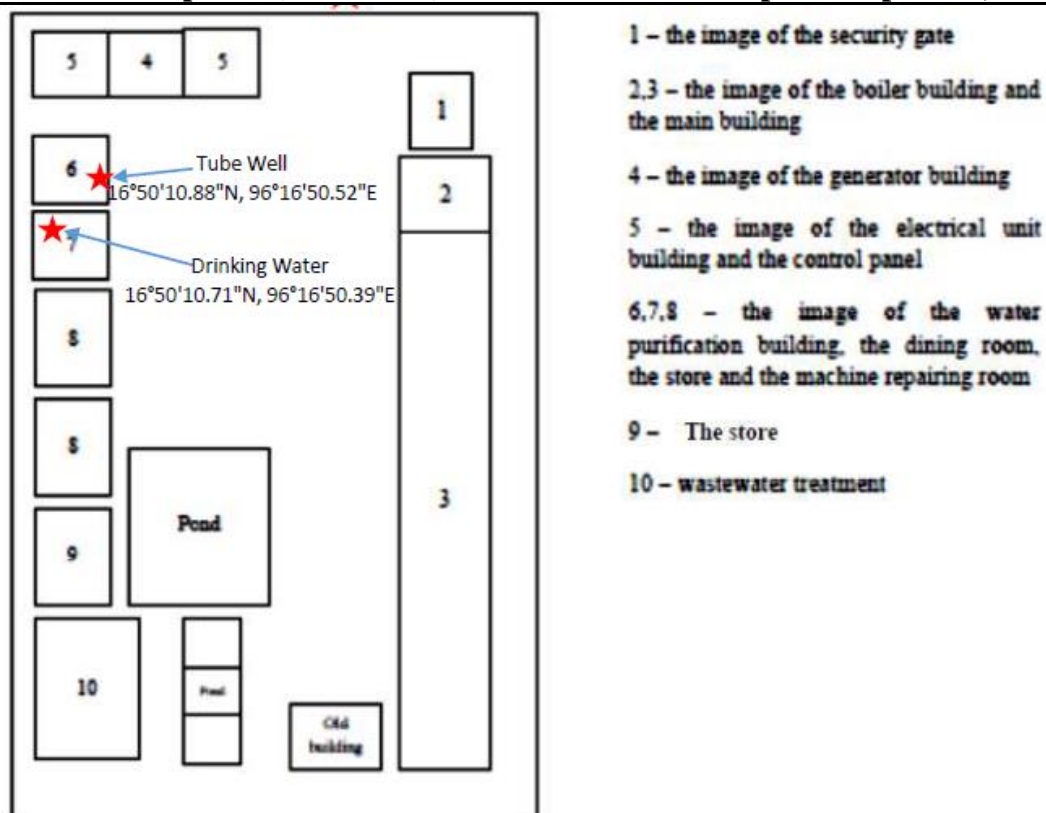


**Figure 5-6: Taking Tube Well Water Sample**



**Figure 5-7: Taking Drinking Water Sample**

The results from GMES Laboratory are compared with the standards of **WHO (2011)**; **EPA (Spring: 2012)** and **Indian Specification (IS: 10500, 2012)** in Table 5.4. The test results of drinking water, when compared with these three standards, are within these standards.



**Figure 5-7-A: Water sampling point for tube well and drinking water**

**Table 5.4 Results of Water Analysis**

Sr. No.	Parameters	Unit	Analysis Value		Drinking Water Standards		
			Type of Water		WHO (2011)	EPA (Spring 2012)	Indian Specification (IS:10500,2012)
			Tube Well	Drinking Water			
1.	Aluminum	ppm	0.02	0.01	0.2	0.2	0.03
2.	Arsenic	µg/l	ND	ND	10	10	10
3.	Chloride	ppm	92	40	250	250	250
4.	Copper	ppm	ND	ND	2	1	0.05
5.	Cyanide	ppm	ND	ND	0.07	0.2	0.05
6.	Manganese	ppm	ND	ND	0.4	0.05	0.1
7.	pH	-	6.89	6.80	6.5~8.	6.5~8.5	6.5~8.5
8.	Sulfate	ppm	ND	ND	250	250	200
9.	Total Alkalinity as CaCO <sub>3</sub>	ppm	227	73	-	-	200
10.	Total Dissolved Solids	ppm	480	230	600	500	500

**Environmental Management Plan-EMP****Unbleached Rice Straw Pulp Mill (URSP Mill)****Nilar Pulp and Paper Co., Ltd.**

11.	Total Hardness as CaCO <sub>3</sub>	ppm	190	48	500	-	200
12.	Total Iron	ppm	0.1	0.1	0.3	0.3	0.3
13.	Turbidity	NTU	5.61	0.84	5	-	1

When the test results of tube-well waters are compared with the standards of **WHO (2011)**, most of the values were within the standards except *Turbidity* whereas all the test values were within the standards of **EPA (Spring: 2012)**. By comparing with the standards of **Indian Specification (IS: 10500, 2012)**, the values were within the standards except *Total Alkalinity* and *Turbidity*.







# Green Myanmar

## Environmental Services Co., Ltd

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 Yangon, Myanmar  
 Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

Name of Client: **Nilar Pulp and Paper Mill** Date of Arrival at Lab : **18.2.2018**

Date of Collection : **15.2.2018**


Date of Issue of Results : **28.2.2018**

### Laboratory Analysis Results of Ground Water

Sr. No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
			Type of Water	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS :10500,2012)
			Tube Well			
1.	Aluminum	ppm	0.02	0.2	0.2	0.03
2.	Arsenic	µg/l	ND	10	10	10
3.	Chloride	ppm	92	250	250	250
4.	Copper	ppm	ND	2	1	0.05
5.	Cyanide	ppm	ND	0.07	0.2	0.05
6.	Manganese	ppm	ND	0.4	0.05	0.1
7.	pH	-	6.89	6.5~8.5	6.5~8.5	6.5~8.5
8.	Sulfate	ppm	ND	250	250	200
9.	Total Alkalinity as CaCO <sub>3</sub>	ppm	227	-	-	200
10.	Total Dissolved Solids	ppm	480	600	500	500
11.	Total Hardness as CaCO <sub>3</sub>	ppm	190	500	-	200
12.	Total Iron	ppm	0.1	0.3	0.3	0.3
13.	Turbidity	NTU	5.61	5	-	1

ND-Not Detected


Analyzed By

  
**Daw Aye Thuzar Hein**  
 Technician (Laboratory)

Checked By

  
**Daw Wint Phyu Htway**  
 Incharge (Laboratory)

Approved By

  
**Daw Cherry Thwin**  
 Manager (Laboratory)





# Green Myanmar

## Environmental Services Co., Ltd

No.115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
 Yangon, Myanmar  
 Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

Name of Client : Nilar Pulp and Paper Mill Date of Arrival at Lab : 18.2.2018

Date of Collection : 15.2.2018

Date of Issue of Results : 28.2.2018

### Laboratory Analysis Results of Ground Water

Sr. No.	Parameters	Unit	Analysis Value	Drinking Water Standards		
			Type of Water	WHO (2011)	EPA (Spring 2012)	Indian Specification (IS :10500,2012)
			Drinking Water			
1.	Aluminum	ppm	0.01	0.2	0.2	0.03
2.	Arsenic	µg/l	ND	10	10	10
3.	Chloride	ppm	40	250	250	250
4.	Copper	ppm	ND	2	1	0.05
5.	Cyanide	ppm	ND	0.07	0.2	0.05
6.	Manganese	ppm	ND	0.4	0.05	0.1
7.	pH	-	6.80	6.5~8.5	6.5~8.5	6.5~8.5
8.	Sulfate	ppm	ND	250	250	200
9.	Total Alkalinity as CaCO <sub>3</sub>	ppm	73	-	-	200
10.	Total Dissolved Solids	ppm	230	600	500	500
11.	Total Hardness as CaCO <sub>3</sub>	ppm	48	500	-	200
12.	Total Iron	ppm	0.1	0.3	0.3	0.3
13.	Turbidity	NTU	0.84	5	-	1

ND-Not Detected

Analyzed By

*[Signature]*  
 Daw Aye Thuzar Hein  
 Technician (Laboratory)

Checked By

*[Signature]*  
 Daw Wint Phyu Htway  
 Incharge (Laboratory)

Approved By

*[Signature]*  
 Daw Cherry Thwin  
 Manager (Laboratory)





**ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း**  
**Ecological Laboratory**



စိမ်းလန်းအသိမြှင့်တင်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ စာအမှတ်: EL-R / 02133

Date / နေ့စွဲ: 22 February, 2018

**Laboratory Analysis Report / ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ**

**Sample Profilesနမူနာရာဇဝင်**

နမူနာအမည် / Sample Name	Tube Well Water	နမူနာအမှတ် / Sample ID	3441
နေရာ (မြို့နယ်) Location (Township)	ဒဂုံဆိပ်ကမ်း	လတ္တီတွဒ် Latitude	
နေရာ (တိုင်း/ပြည်နယ်) Location (Division/State)	ရန်ကုန်	လောင်ဂျီတွဒ် Longitude	
ပေးပို့သူအမည် Sender Name	Nilar Pulp and Paper Mill (GMES)	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	15.2.2018
အဖွဲ့အစည်း Organisation	-	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	19.2.2018
ဆက်သွယ်ရန် Contact	09253083501		

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

**Analysis Results စမ်းသပ်ချက်အဖြေ**

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ်အဖြေ Results	နည်းစဉ် Method	သောက်မှတ်ချက် Drinking Standard	စွန့်ထုတ် စံနှုန်း Effluent Standard	မှတ်ချက် Remarks
၁	ရူပဓာတ် (pH)	7.5	pH meters	6.5 - 8.5	6.0 - 9.0 *	Normal
၂	ကလိုရိုက် (Chloride)	67 mg/L	Lovibond SpectroDirect Method No. 90	≤ 250 mg/L	NG	Normal
၃	အမေး အသွက် (Hardness)	130 mg/L	Lovibond SpectroDirect Method No. 200	≤ 60 mg/L	NG	Hard
၄	သံ သတ္တုဓာတ် (Iron)	<0.1 mg/L	Lovibond SpectroDirect Method No. 220	≤ 0.2 mg/L	≤ 3.5 mg/L *	Normal
၅	ဗီစီဓာတ် (Arsenic)	0 mg/L	Lovibond Arsenic test kit code.no -400700	≤ 0.01 mg/L	≤ 0.1 mg/L *	Normal

\* Myanmar Emission Guideline 2015

NG=No Guideline

ND= Not Detected

စမ်းသပ်ပြီး Tested by

စစ်ဆေးပြီး Checked by

တာဝန်ခံ Approved by

**Daw May Myat Khine**  
 Lab. Technician II  
 Ecological Laboratory  
 ALARM

**Daw Lin Myat Myat Aung**  
 Lab. Technician I  
 Ecological Laboratory  
 ALARM

**Dr. Aye Aye Win**  
 Project Team Leader  
 Ecological Laboratory  
 ALARM

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(မိတ်ခွဲခန်း၏ စာဖြင့်ရေးသားသောသဘောတူညီချက်မရရှိဘဲယခုအစီအရင်ခံစာကိုအပြည့်အစုံမှန်ကန် တစ်စိတ်တစ်ပိုင်း ဖြတ်ယူအသုံးပြုခြင်း၊ မိတ္တူကူးခြင်းမပြုရပါ။)

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**ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း**  
**Ecological Laboratory**



စိမ်းလန်းအသိမြှင့်တင်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ စာအမှတ်: EL-R / 02134

Date / နေ့ရက်: 22 February, 2018

**Laboratory Analysis Report /ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ**

**Sample Profilesနမူနာရာဇဝင်**

နမူနာအမည် / Sample Name	Drinking Water	နမူနာအမှတ် / Sample ID	3442
နေရာ (မြို့နယ်) / Location (Township)	ဒဂုံစိပ်ကမ်း	လတ္တီတွဒ် / Latitude	
နေရာ (တိုင်း/ပြည်နယ်) / Location (Division/State)	ရန်ကုန်	လောင်ဂျီတွဒ် / Longitude	
ပေးပို့သူအမည် / Sender Name	Nilar Pulp and Paper Mill (GMES)	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) / Sampling Time (Date, Time)	15.2.2018
အဖွဲ့အစည်း / Organisation	-	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) / Arriving Time (Date, Time)	19.2.2018
ဆက်သွယ်ရန် / Contact	09253083501		

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပိုမိုဆောင်ရွက်ရန်နမူနာကိုသာအခြေခံထားပါသည်။)

**Analysis Results စမ်းသပ်ချက်အဖြေ**

စဉ် / Sr.	အရည်အသွေးညွှန်းကိန်း / Quality Parameter	ရလဒ်အဖြေ / Results	နည်းစဉ် / Method	စံသတ်မှတ်ချက် / Drinking Standard	စွန့်စေရ စံနှုန်း / Effluent Standard	မှတ်ချက် / Remarks
၁	ချဉ်ဖန်ကိန်း (pH)	7.3	pH meters	6.5 – 8.5	6.0 – 9.0 *	Normal
၂	ကလိုရိုက် (Chloride)	100 mg/L	Lovibond SpectroDirect Method No. 90	≤ 250 mg/L	NG	Normal
၃	အစေး အသွက် (Hardness)	20 mg/L	Lovibond SpectroDirect Method No. 200	≤ 60 mg/L	NG	Soft
၄	သံ သတ္တုဓာတ် (Iron)	<0.1 mg/L	Lovibond SpectroDirect Method No. 220	≤ 0.2 mg/L	≤ 3.5 mg/L *	Normal
၅	အိန်တင် (Arsenic)	0.005 mg/L	Lovibond Arsenic test kit code.no -400700	≤ 0.01 mg/L	≤ 0.1 mg/L *	Normal

\* Myanmar Emission Guideline 2015

NG=No Guideline

ND= Not Detected

စမ်းသပ်ပြီး / Tested by

စစ်ဆေးပြီး / Checked by

တာဝန်ခံ / Approved by

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(ဤစာတမ်းသည် စာတိုက်ရေးသားသောသူတို့၏ရေးသားမှုအပေါ်အခြေခံထားပြီး စာတိုက်ရေးသားသူတို့၏ရေးသားမှုအပေါ်အခြေခံထားပါသည်။)

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### **5.2.4 Air Quality**

The air qualities for **URSP Mill** are as follows:

- Ambient air quality
- Workplace air quality
- Boiler stack gas quality

#### **Ambient Air Quality**

To analyze the ambient air quality of **URSP Mill**, *Haz Scanner Model-EPAS* was used. Air samples from the empty space between the main building and the store were taken from 10<sup>th</sup> April 2018 to 11<sup>th</sup> April 2018.

The photos of measuring the ambient air qualities are shown in *Figure 5-8*; and the location of measured place is shown in *Figure 5-9* and the results of the ambient air are described as follow.



**Figure 5-8: Ambient Air Qualities Measurement**

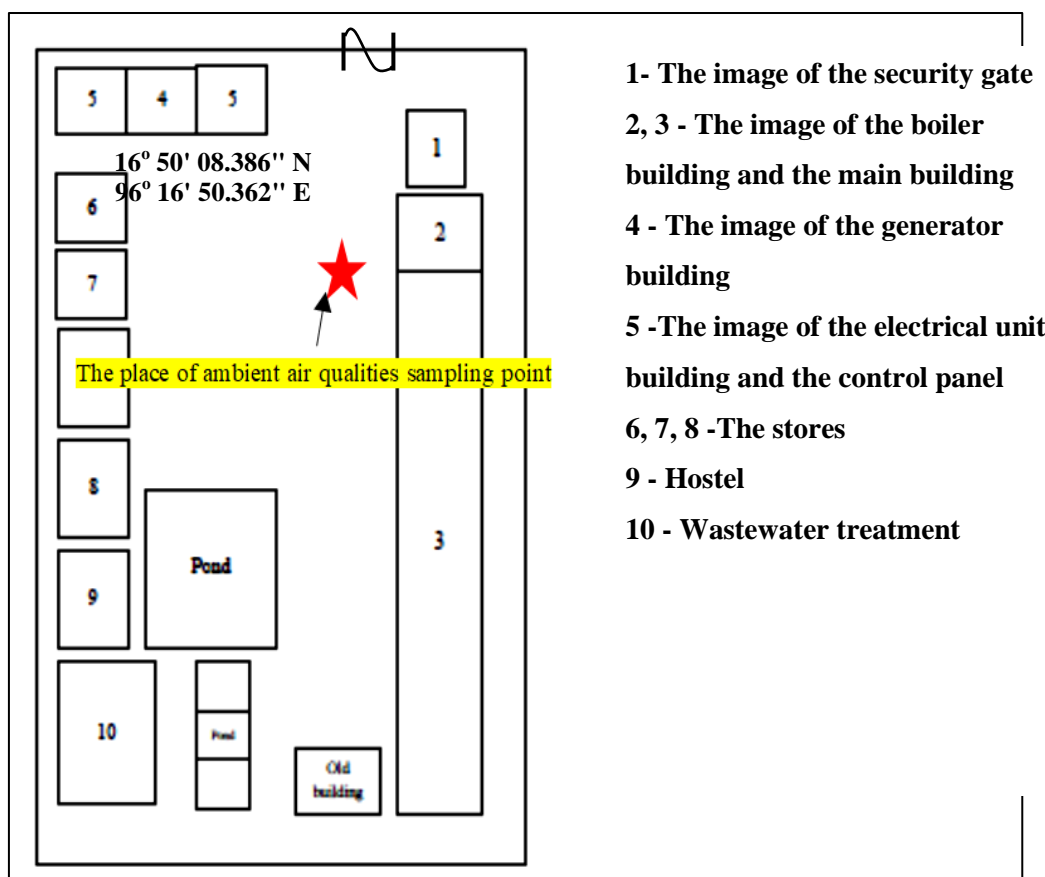


Figure 5-9: Ambient Air Sampling Station

Table 5.5 Comparison Table of Value of Ambient Air Monitored with NEQ(E)G that of Guideline

Sr. No.	Parameters	Unit	Ambient Air quality results	Standard Values of National Environmental Quality (Emission) Guidelines	Variation from Standard Value	Remark
1.	Nitrogen Dioxide	$\mu\text{g}/\text{Nm}^3$	35.85	201ne hour)	- 164.15	
2.	Ozone	$\mu\text{g}/\text{Nm}^3$	17.07	101 hour)	-82.93	
3.	Particulate Matter, $\text{PM}_{10}$	$\mu\text{g}/\text{Nm}^3$	79.66	50	+29.66	
4.	Particulate Matter, $\text{PM}_{2.5}$	$\mu\text{g}/\text{Nm}^3$	51.61	25	+26.62	

**Environmental Management Plan-EMP****Unbleached Rice Straw Pulp Mill (URSP Mill)****Nilar Pulp and Paper Co., Ltd.**

5.	Sulfur Dioxide	μg/Nm <sup>3</sup>	0.03	20	-19.97	
6.	Ammonia	mg/L	36.84	-	-	
7.	Carbon Dioxide	mg/L	299.44	-	-	
8.	Carbon monoxide	mg/L	0.33	-	-	
9.	Volatile Organic Compounds	μg/L	0.00	-	-	
10.	Oxygen	%	21.3	-	-	

The above table shows that the contents of *Nitrogen Dioxide*, *Sulfur Dioxide* and *Ozone* were within the standard value. The content of *Particulate Matter*, *PM<sub>10</sub>* and *Particulate Matter*, *PM<sub>2.5</sub>* exceeds the respective standard values.

The *Temperature* was about **35°C**, and the *Wind Speed* was about **1.4 mile per hour**.





## Green Myanmar

### Environmental Services Co., Ltd

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#### Ambient Air Quality Report

Date: 6/6/2018

လေတိုင်းသည့်နေရာ Sample site	Nilar plup and paper	လေနမူနာအမှတ်စဉ် Sampling I.D	EMP-007	
နေရာ(မြို့နယ်) Location (Township)	Dagon Seikkan	လက်စွဲတွင် latitude	16°50'08.386"	
		လောင်ဂျီတွင် longitude	96°16'50.632"	
နေရာ(တိုင်းပြည်နယ်) Locaion (Region/State)	Yangon Region	နည်းစဉ် Method	Haz-Scanner Model-EPAS	
		စက်တည်အမြင့်(မြေပြင်မှ) Station height(about ground)	5 ft	
တိုင်းတာလိုသူအမည် Name of customer;	Nilar plup and paper	စတင်တိုင်းတာသည့်အချိန် (နေ့-အချိန်) Log on Time(Date, Time)	10/4/2018	10:20AM
တိုင်းတာသည့်နေ့စွဲ Air Sampling Testing Date	10/4/2018	တိုင်းတာပြီးသည့်အချိန် (နေ့-အချိန်) Log off Time(Date;Time)	11/4/2018	10:20AM
ဆက်သွယ်ရန်လိပ်စာ Contact Adress/Phone	No.(59) U Shwe Bin Street, Industry Zone(1) Dagon Seikkan Township, Yangon Region	တိုင်းတာမှုကြာချိန် Logging Duration(hours)	24 hrs	





# Green Myanmar

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### Comparison of results value and Guideline Standard

စဉ် No.	အရည်အသွေး Parameter	ရလဒ် Result	ယူနစ် Unit	ပျမ်းမျှကာလ Avg .Period		ထုတ်လုပ်မှုစံနှုန်း Guid line Value	ပျမ်းမျှ ကာလ AVG. Period
1	နိုက်ထရိုဂျင်ဒိုင်အောက်ဆိုဒ် Nitrogen dioxide	35.85	μg/m <sup>3</sup>	-	-	*40μg/m <sup>3</sup>	1-year
				24	hours	*200μg/m <sup>3</sup>	1-hour
2	Particulate matter PM10	79.66	μg/m <sup>3</sup>	-	-	*20 μg/m <sup>3</sup>	1-year
				24	hours	*50 μg/m <sup>3</sup>	24-hours
3	Particulate matter PM2.5	51.61	μg/m <sup>3</sup>	-	-	*10 μg/m <sup>3</sup>	1-year
				24	hours	*25 μg/m <sup>3</sup>	24-hours
4	ဆာလဖာဒိုင်အောက်ဆိုဒ် Suiphur Dioxide	0.03	μg/m <sup>3</sup>	24	hours	*20 μg/m <sup>3</sup>	24-hours
				-	-	*500 μg/m <sup>3</sup>	10 minute
5	အမိုးနီးယား Ammonia	36.84	ppm	24	hours	NG	-
6	ကာဗွန်ဒိုင်အောက်ဆိုဒ် Carbon dioxide	299.44	ppm	24	hours	NG	-
7	ကာဗွန်မိုနောက်ဆိုဒ် Carbon monoxide	0.13	ppm	24	hours	NG	-
8	အပူချိန် Temperature	36	°C	24	hours	NG	-
9	Volatile Organic Compound	0.00	ppb	24	hours	NG	-
10	လေတိုက်နှုန်း Wind Speed	1.4	mph	24	hours	NG	-
11	လေတိုက်ရာအရပ် Wind Direction	45	Deg	24	hours	NG	-
12	အိုဇွန် Ozone	33.45	ppb	24	hours	100μg/m <sup>3</sup>	8-hour daily Maximum
13	အောက်စီဂျင် Oxygen	21.30	%	24	hours	NG	-
14	ဆူညံမှု Noise	72.56	dBA	24	hours	70	(Day Time)
		65.3				70	(Night Time)

Field Assistant  
  
 U Thi Ha Zaw

Surveyor  
  
 U Aung Ko Min

Approved By  
  
 U Pyae Phyo Kyaw  
 Environmental Quality  
 Monitoring Supervisor



**Workplace Air Quality**

On 15<sup>th</sup> February 2018, the following seven points inside the factory were chosen to measure the workplace air qualities.

Measurements were performed for one-hour duration at each point by using Air Quality Analyzers (See *Figure 5-10*).

Particulate Matter

DUST TRACK <sup>TM</sup>

TVOC

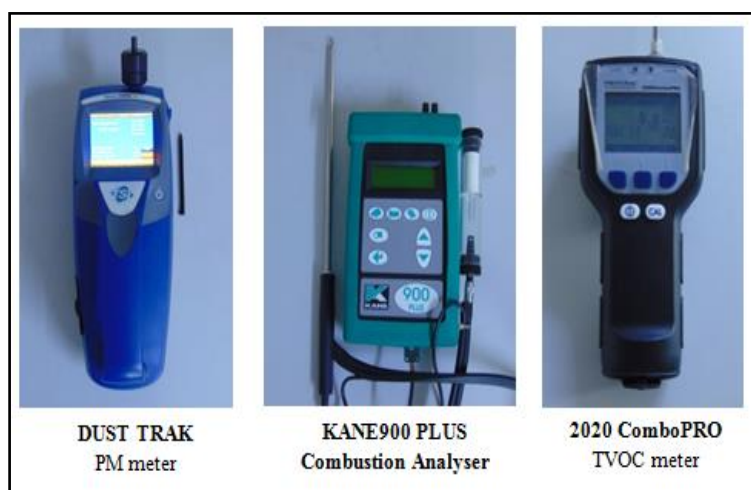
PHOTO VAC 2020 COMBO PRO

Noise

SOUND LEVEL METER

**Table 5.6 Workplace Air Quality Monitoring Stations**

Measuring Station	Description	Reference
Point-1	Straw Store	<i>Figure 5-11</i>
Point-2	Near Digester	
Point-3	Near Caustic Soda Tank	
Point-4	At Place Straw Filling to Digester	
Point-5	Near Pulp DewateringSection	
Point-6	Near Finished Goods	
Point-7	Boiler Room	



**Figure 5-10: Air Quality Analyzers**



Point - 1



Point - 2



Point - 3



Point - 4



Point - 5



Point - 6



Point - 7

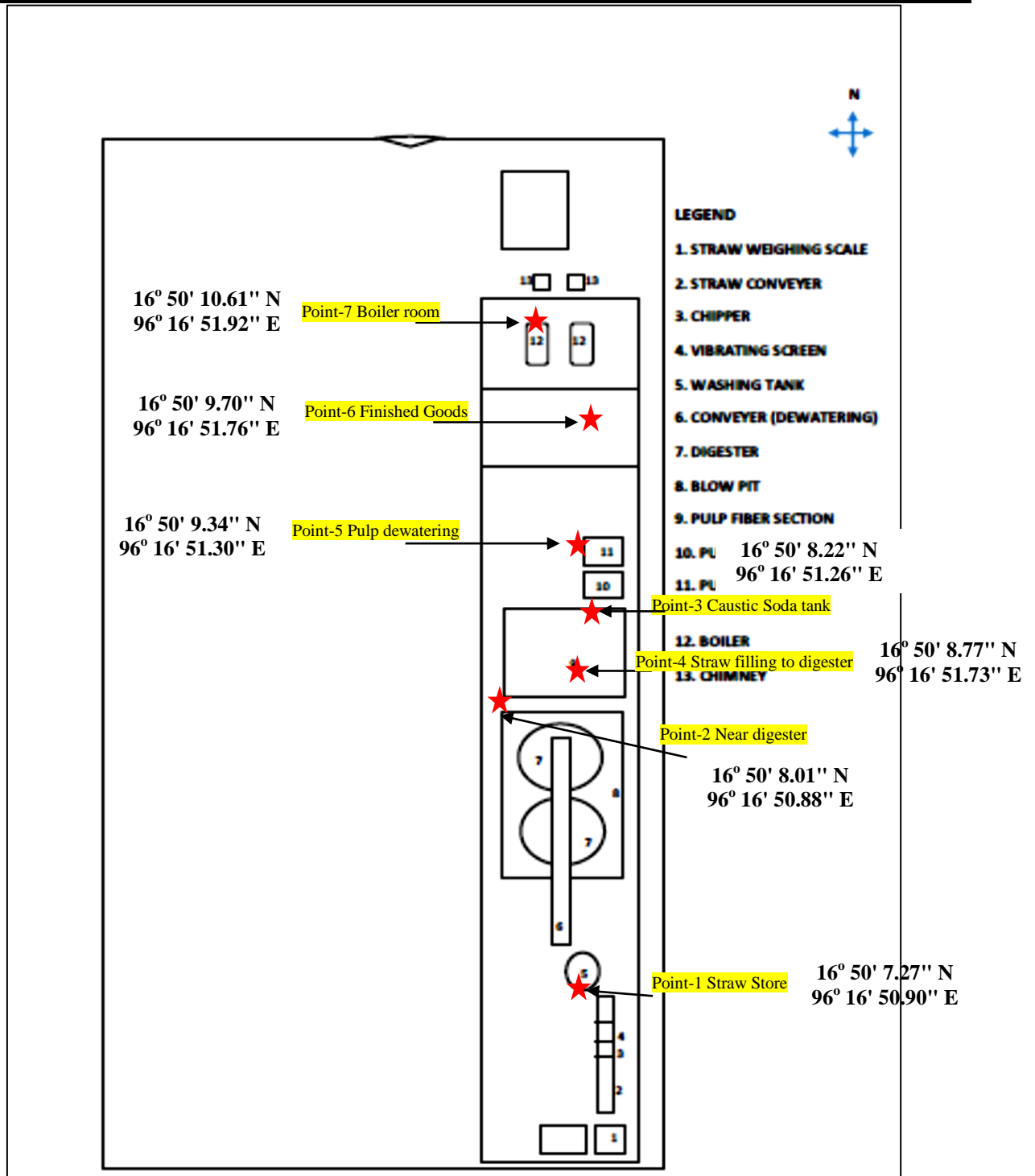


Figure 5-11: Workplace Air Quality Measurement Points



# Green Myanmar

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### Workplace Air Quality Monitoring Results

Project Name	Nilar Pulp and Paper
Survey Date	15/2/2018
Survey Instruments Name	Dust Trak <sup>TM</sup> II, PHOTOVAC 2020 Combo Pro, Noise Meter
Project Code	EMP 008

#### Sampling ID: 001 (ကောက်ရိုးထားရာနေရာ)

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	-	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	404	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	396	[μg/m <sup>3</sup> ]	1 hour
4	Noise	75.7	dB	1 hour

#### Sampling ID: 002 (ကောက်ရိုးပေါင်းဆုံသည့်နေရာ)

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	16.7	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	2090	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	1080	[μg/m <sup>3</sup> ]	1 hour
4	Noise	87.15	dB	1 hour

#### Samplind ID: 003 (NAOH ကန်)

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	61.4	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	461	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	367	[μg/m <sup>3</sup> ]	1 hour
4	Noise	80.2	dB	1 hour





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**Sampling ID: 004 (ကောက်ရိုးဖြည့်နေရာ)**

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	1.8	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	418	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	269	[μg/m <sup>3</sup> ]	1 hour
4	Noise	81	dB	1 hour

**Sampling ID: 005 (ဝတ္တု ကြိတ် Roller)**

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	3.7	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	239	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	252	[μg/m <sup>3</sup> ]	1 hour
4	Noise	88.9	dB	1 hour

**Sampling ID: 006 (ကုန်ချော ထားရာနေရာ)**

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	-	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	245	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	198	[μg/m <sup>3</sup> ]	1 hour
4	Noise	90.1	dB	1 hour

**Sampling ID: 007 (ဘို့လ်လာ)**

	Parameter	Results	Unit	Duration
1	Total Volatile Organic Compound (TVOC)	-	ppm	1 hour
2	Particulate Matter, PM <sub>10</sub>	322	[μg/m <sup>3</sup> ]	1 hour
3	Particulate Matter, PM <sub>2.5</sub>	154	[μg/m <sup>3</sup> ]	1 hour
4	Noise	95.35	dB	1 hour

**U Thiha Zaw**  
 Field Assistant

**U Aung Ko Min**  
 Surveyor

**U Pyae Phyaw Kyaw**  
 Environmental Quality  
 Monitoring Supervisor



**Table 5.7 Comparison Table of Air Quality for Workplace Monitored Values with that of NEQ (E) G Guideline**

Sr. No.	Parameter	Unit	Measured Value	Standard Values of National Environmental Quality (Emission) Guidelines	Variation from Standard Value	Remark
<b>Straw Store</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	ND	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	404	50	+354	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	396	25	+371	
<b>Near Digester</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	37	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	239	50	+189	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	252	25	+227	
<b>Caustic Soda Solution Tank</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	61.4	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	461	50	+411	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	367	25	+342	
<b>Straw Filling to Digester</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	1.8	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	418	50	+368	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	269	25	+244	
<b>Pulp Dewatering Section</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	3.7	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	239	50	+189	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	252	25	+227	
<b>Near Finished Goods</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	-	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	245	50	+195	
3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	198	25	+173	
<b>Boiler Section</b>						
1	Total Volatile Organic Compound (TVOC)	ppm	-	-	-	
2	Particulate Matter, PM <sub>10</sub>	µg/Nm <sup>3</sup>	322	50	+272	





3	Particulate Matter, PM <sub>2.5</sub>	µg/Nm <sup>3</sup>	154	25	+129	
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### Boiler Stack Gas Quality

Moreover, to know about the influence of boiler stack gas on the ambient air quality, the quality of boiler stack gas was measured. The measured results and photos of boiler stack gas monitoring were shown in *Figure 5-12*.



**Figure 5-12: Boiler Stack Gas Monitoring**

**Table 5.8 Comparison Table of Boiler Stack Gas Monitored Value with that NEQ(E)G Guideline**

Parameter	Unit	Value				Small combustion facilities emission guideline	Remark
		After 15 min	After 30 min	After 45 min	After 60 min		
O <sub>2</sub>	mol %	17.8	18.2	16	20	-	NO <sub>2</sub> and SO <sub>2</sub> are in range.
CO	mg/m <sup>3</sup>	168	210	195	120	-	
CO <sub>2</sub>	mol %	2.7	3.	3.1	2	-	
NO <sub>2</sub>	mg/m <sup>3</sup>	12	4	0	30	460	
SO <sub>2</sub>	mg/m <sup>3</sup>	16	0	21	30	2000	



# Green Myanmar

## Environmental Services Co., Ltd

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### Emission Gas from Boiler Stack

Parameter	Unit	Value				Small combustion facilities emission guideline
		After 15 minute	After 30 minute	After 45 minute	After 60 minute	
O <sub>2</sub>	mol %	17.8	18.2	16	20	-
CO	mg/m <sup>3</sup>	168	210	195	120	-
CO <sub>2</sub>	mol %	2.7	3	3.1	2	-
NO <sub>2</sub>	mg/m <sup>3</sup>	12	4	0	30	460
SO <sub>2</sub>	mg/m <sup>3</sup>	16	0	21	30	2000

**U Thiha Zaw**  
Field Assistant

**U Aung Ko Min**  
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**U Pyae Phyo Kyaw**  
Environmental Quality  
Monitoring Supervisor

According to the results of boiler stack gas, the emissions gases are under standard limitations are good combustion condition.

**5-2-5 The Odor**

For **Nilar Pulp and Paper Co., Ltd. (URSP Mill)**, the workplace and the ambient air qualities were measured at 15<sup>th</sup> February and 10<sup>th</sup> April 2018 respectively. According to the GMES workmen's sensory measured at these points; there was some odor and it was tolerable. The sensory remark of these workmen was shown as following table.

**Table 5.9 Odor Conditions of Workplace for the Nilar Pulp and Paper Mill**

Sr. No.	Person, detect odor by sensory	Designation	Section	Tested Place	Date	Odor Condition		
						Yes/No	Tolerable	Not tolerable
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Straw Store	15.2.2018	No No No	✓ ✓ ✓	
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Near Digester	15.2.2018	Yes Yes Yes	✓ ✓ ✓	
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Near Caustic Soda Tank	15.2.2018	No No No	✓ ✓ ✓	
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Near Pulp Dewatering Section	15.2.2018	No No No	✓ ✓ ✓	
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Near Finished Goods	15.2.2018	No No No	✓ ✓ ✓	
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Boiler Room	15.2.2018	No No No	✓ ✓ ✓	
1. 2. 3.	Kyi Han Bo Myo Thet Naung Myo Min Htun	Team Leader Supervisor Supervisor	GMES	Place between the main building and the store	10.4.2018	No No No	✓ ✓ ✓	



**5-2-6 Noise and Vibration**

The workplace noise was measured in 15<sup>th</sup> February 2018 at the same places of measuring air qualities. (See Section 5.2.4-Workplace Air Quality, *Figure 5-11* and Table 5.6)

The noise levels at workplaces were measured and compared with the standard values of National Environmental Quality (Emission) Guidelines in the following table.

**Table 5.10 Comparison Table of Noise Level (dBA) at Workplaces with that of NEQ(E)G Guideline**

Sr. No.	Measured Places and Parameters	Unit	Measured Noise Level	Standard Guideline Values [NEQ(E)G]	Variation from Standard Value	Remark
1.	Straw Store	dB(A)	75.7	70	+5.7	
2.	Near Digester	dB(A)	87.15	70	+17.15	
3.	Place near Caustic Soda Tank	dB(A)	80.2	70	+10.2	
4.	Place straw filling to Digester	dB(A)	81	70	+11	
5.	Near Pulp Dewatering Section	dB(A)	88.9	70	+18.9	
6.	Near Finished Goods	dB(A)	90.1	70	+20.1	
7.	Boiler room	dB(A)	95.35	70	+25.35	

**5.3 Biological Components**

Dagon Seikkan Township, Industrial Zone (1) in which **URSP Mill** is located has been already established since 1994. Thus, there are no issues on biodiversity, but ecosystem beyond the industrial zone should be controlled by every emission of each factory follow the NEQ (E) G guideline values.

**The Flora**

The floras which are grown in Dagon Myot Thit (Seikkan) Township are nipa palm (dhani), mangrove trees, and khaya plants.

**5.4 Socio-Economic Components**

**5.4.1 Social Facts**

***High Education***

-The Nationalities Youth Resource  
Development Degree College

***Basic Educations***

Basic Education High Schools -3 Nos.

Basic Education Middle Schools -4 Nos.



**Environmental Management Plan-EMP****Unbleached Rice Straw Pulp Mill (URSP Mill)****Nilar Pulp and Paper Co., Ltd.**

Basic Education Primary Schools	-11 Nos.
The Nursery School	-1 No.
Monastery Education Schools	-8 Nos.
The enrollment of school-age children	-100%
The achievements of matriculation examination	
	-23.09% in 2015-2016
	-28.20% in 2016-2017
The literacy percentage	-100% (above the age of 15)
Learning and studying supported classrooms opening	-3 Nos. (B.E.H.S)
	-4 Nos. (B.E.M.S)
	-11Nos. (B.E.P.S)
The library opening	-12 Nos.

**5.4.2 Economic Facts**

Dagon Myot Thit (Seikkan) Township is situated in Yangon Region and is also the developing township consisting of two industrial zones. Paddy cultivation and the car business are the main businesses. In this township, the mung beans and the green beans are also harvested in this area.

There are 75 industries in Industrial Zone (1), 28 industries in Industrial Zone (2) and 211 cottage enterprises with 758 employees. There are no products from the forest and the minerals. There are 5 guesthouses. The local net production of Dagon Myot Thit (Seikkan) Township is 195516.5 MMK and it is the 104.4% of the appropriation. The percentage of unemployed person is 13.01%.

**5.4.3 Cultural Facts**

There are no distinct pagodas, monasteries, the monuments and the other religion buildings or places in Dagon Myot Thit (Seikkan) Township. There are 14 Pagodas, 49 monasteries, 7 nunneries and 25 chapels as religion buildings.

### **5.5 Surveying Records of G.M.E.S Team to Fulfill the Suggestion and Direction by the Environmental Conservation Department upon EMP Report for Nilar Pulp and Paper Mill Prepared Dated 2018 December**

The surveying records of G.M.E.S team for the preparation of EMP report are shown as following table 5.11.



**Table 5.11 Survey Record of G.M.E.S Team for the Preparation of EMP Report Nilar Pulp and Paper Mill**

<b>SR.No.</b>	<b>Description</b>	<b>Date</b>	<b>Remark</b>
1.	Soil sampling and analyzed	15.12.2018 18.2.2018 28.2.2018	Sampling Analyzing Analyzing
2.	Ambient air quality	10.4.2018 11.4.2018 6.6.2018	Monitoring Monitoring Result issued
3.	Boiler stack gas quality	10.4.2018 11.4.2018 6.6.2018	Monitoring Monitoring Result issued
4.	Workplace air quality	15.2.2018 18.2.2018	Monitoring Result issued
5.	Ambient water and ground water sampling and analyzing	15.2.2018 28.2.2018	Sampling Result issued
6.	Wastewater	15.2.2018 28.2.2018	Sampling Result issued
7.	Site seeing and data collection	15.2.2018 16.2.2018 26.2.2018	
8.	Discussion with staff and collection the opinion, suggestion of employee	15.2.2018	Meeting
9.	Discussion with person of factory and collection the opinion, suggestion of them.	1.9.2018	Meeting
10.	Wastewater sampling and analyzing to fulfill the ECD command	16.1.2020 23.1.2020	Recorded and reporting in EMP. Section 5.5 and 6.3.

## **6.0 IMPACTS AND MITIGATION MEASURES**

**Nilar Pulp and Paper Mill** uses rice straw as a basic raw material to produce unbleached rice straw pulp sheets. The manufacturing and distribution of the pulp sheet makes impacts the environment due to emissions of air pollutants, wastewater generation, and soil contamination, in addition to the noise and odor impacts. This chapter will describe the followings:

- 6.1 Emissions
- 6.2 Assessment of impacts by emissions
- 6.3 Hazardous Substances
- 6.4 Description of proposed mitigation measure
- 6.5 Impacts assessment and mitigation Measures
- 6.6 Guideline Limitations of National Environmental Quality (Emission) Guidelines, concerning the emitted substances from factory to environment as air, water and noise impacts
- 6.7 Explanation of the Review and Suggestion by the Environmental Conservation Department upon the EMP Report Prepared December 2018

### **6.1 Emissions**

- 6.1.1. Emissions to air
- 6.1.2. Emissions to water
- 6.1.3. Emissions to soil
- 6.1.4. Noise impact
- 6.1.5. Odor

#### **6.1.1 Emissions to air**

Due to the operation of URSP Mill, the following activities create emissions to air.

##### **Exhaust from the Transportation Vehicles**

In this factory, there are vehicles used for carrying the caustic soda, salt, rice husk, and saw dusk; moving the equipment and the employee's ferry. The fuels (diesel or petrol) used for the cars are combusted in the engine and carbon dioxide and water vapor are emitted to the air via the car exhaust pipe. Sulfur dioxide gas, carbon monoxide and carbon particles may also be emitted because of low quality diesel or petrol. When the engine power is decreased, the combustion is incomplete



and the impurities from the engine oil are accumulated in the engine and emitted to air.

#### **Exhaust from the Electric Generator Sets**

In **URSP Mill**, the generators are kept stand-by in case of electricity cut-off so that ready to use in time. These generators have output rating 400kVA, 315kVA, 250kVA and 150kVA. When diesel is combusted in the engine, carbon dioxide gas and water vapor are emitted to the air. Sulfur dioxide gas, carbon monoxide and carbon particles may also be emitted because of low quality diesel or petrol and low engine efficiency.

#### **Dust and Particulate Matters Emission from the Transportation, Storing, and Chipping of the Raw Rice Straw and From Screening the Chipped Rice Straw**

In **URSP Mill**, the main raw material, rice straw, is received as the bale. When unloading the bale of rice straw from the transportation car; moving off and loading to the conveyor, dust and particulate matter are emitted to the air.

Straw dusts are also emitted to the air when the rice straw is chipped to get the 1.5~2" size.

The chipped rice straw is loaded to the vibrating screen to remove the undersized rice straw emitting straw dust and particulate matter to the air.

#### **Fumes Due To Heat Evolved By Dissolving the Caustic Soda**

The black liquor is recycled to the digester. However, its concentration of caustic soda is too low to digest rice straw. Thus, it is necessary to increase its strength by adding more concentrated caustic soda solution. Heat as well as fumes are emitted when preparing this concentrated caustic soda solution with water.

#### **Fumes and Particulate Matter Emission by Degassing Of Digester**

In this factory, the cleaned rice straw and the caustic soda solution are mixed in the digester and heated with the steam. When heated, the pressure increases due to the entrapped air inside the digester. It is necessary to release that entrapped air to get the pure steam pressure. The vapor and particulate matters are entrained by the steam when the digester is vented.

#### **Fumes Emitted From Opening and Discharging of Digester**

The digested rice straw is blown out into the blow pit after digestion. Fume is emitted to the air when the solution is blown out.

#### **Vapor Emitted From Drying of Pulp Sheets**

The rice straw pulp is loaded on the screens and conveyed by pressing between the two drums filled with the steam. So, the water from the pulp is turned

into the vapor and this vapor is emitted to the air.

### **Stack Gases, Dust and Particulate Matters from the Boiler Chimney and Combustion Chamber**

In **URSP Mill**, the saw dust and the rice husk are burned in the boiler to generate the steam. From the combustion, carbon dioxide and water vapor are emitted to the air from the chimney of boiler. Somedust and particulate matter as well as flue gas from combusting chamber come out from chimney while the bottom ashes are removed for cleaning.

### **Flew-Off Ash of Rice Husks / Saw Dusts**

In **URSP Mill**, the bottom ash is taken off from the boiler combusting chamber. If it is not systematically managed, the ash may flow out in all direction.

### **Vapor Emitted From Cooking In the Employees' Kitchen**

In this factory, the employees, 45 persons, stay in the hostel and the vapor from cooking for these employees is emitted to the air.

### **6.1.2 Emissions to Water**

During the operation phase, wastewater is generated from the followings:

#### **Domestic Usage of Water by Employees**

In this factory, the wastewater from domestic use of water by employees and the flush water from toilets enter the septic tanks and the drains and can be reached to the water environment.

#### **Washing the Machines and Tanks**

In **URSP Mill**, according to the process requirements, the chests, conveyors, washing tanks and the caustic soda solution tanks are needed to wash and it emits to water.

#### **Accidental spillage of transformer oils, lubricant and battery acids**

The accidentally spilled liquids are emitted to the water environment during the handling and transportation of transformer oils, lubricant oils, the battery acids and the fuels.

#### **Washing the Rice Straw**

The washing of chipped straw before loading to the digester may cause pollution of the water.

#### **Spillage from the Vibrating Screens and the Dewatering Conveyor**

The undersized chipped straws and sand are separated from washed chipped

straw by vibrating screens and dewatering conveyor. During this operation liquid spillage can occur.

### **From Washing of Pulps**

The squeezing the digested pulp in thickener; removing the sand and uncooked pulp by Johnson screen; the sand and the wastewater from H.D cleaner; and the high pressure screen; the recycled wastewater from Twin Wire screen; and the spilled liquids from Vats (Vat-1, 2) are emitted to the water environment.

### **Rain Water Containing Impurities**

The fumes, dust and the particulate matter from the exhaust pipes of transportation vehicles and generators; chipping machines; vibrating screen; digesters; boiler stack; pulp sheet dryer are reached to the air and they are absorbed by the rain and/or the liquid together with the rain water.

### **Boiler Blow-Down Water**

Dissolved solids and particles in the make-up water will remain in the boiler when steam is generated. During operation the total dissolved solids (TDS) builds up finally reaching a concentration level where the operation of the boiler becomes impossible. To prevent the scale and corrosion of the boiler, the water is blown out of the boiler with some force by steam pressure within the boiler discharging dissolved solid was emitted to the environment.

### **Effluent from the Water Treatment Plant**

The boiler feed water is treated in the water treatment plant. As the nature of water treatment plant, any chemicals used in the treatment process are present in the filter washwater and they introduce pollutants when discharged into watercourses.

### **Effluent from the Kitchen for the Employees**

The employees stayed in the hostel and use water for washing fish, meat, and vegetables to cook. After meals, dishes are washed. The wastewater is discharged from these activities. .

### **Effluent from the Wastewater Treatment Plant**

Wastewater from the pulp mill is collected and treated by anaerobic, aerobic, chemical treatment procedure. After treatment, the wastewater was emitted to the water.

### **6.1.3 Emissions to Soil**

During the operation phase, the solid wastes consist of the following:

#### **The Wastes in the Workplace**

The personnel use such as food packages and tissues from employees, are



emitted to the environment.

#### **Office Wastes**

The unwanted papers, stationeries, computer parts, copier parts, broken and damaged light bulbs of this factory are emitted to the soil.

#### **Solid Wastes from the Packaging of Straw Pulp Sheets**

The gunny ropes and the binding wires for packaging the rice straw bales, saw dust, and the rice husk, the binding wire pieces from packaging the pulp sheet bales, the broken glassware from the laboratory, the empty bags of caustic soda, salt, resins, and the containers of lubricants are disposed to the environment.

#### **Dust and Particulate Matters from Transporting, Chipping and Screening the Rice Straw**

The undersized rice straws, the dust, the sand and the garbage are emitted to the environment by the activities of handling of rice straw, loading to the conveyor, chipping and screening the rice straw.

#### **The Solid Wastes in the Wastewater**

Sand, stones and the undersized rice straws in the spilled liquids from washing the rice straw and the wastewater from dewatering conveyor, thickener, Johnson screen, H.D cleaner, high pressure screen and Twin wire screen are emitted to the environment.

#### **Suspended Solids in the Water and Air**

The vapor and the particulate matters from the air scrubbed by the rain water are emitted to the soil.

#### **The Flew-Off Ash, Rice Husk/Saw Dust from the Boiler**

Steam is used and generated from the boiler by combusting the rice husk/saw dust in the boiler. In the flew-off vapor from the boiler, the ash of rice husk/saw dust is flown together with the air and is emitted to the environment.

#### **Bottom Ash from the Boiler Combusting Chamber**

In this factory, when the rice husks/saw dusts are combusted in the boiler, the bottom ashes are generated in the boiler combusting chamber. These ashes are emitted to the environment.

#### **Solid Wastes from the Kitchen**

The packaging substances of vegetables, the food residues, and the left-over foods, wastes from cooking for the employees stayed in hostel are emitted to the



environment.

#### **6.1.4 Noise impact**

The operation of the water pumps, the conveyors, the vibrating screens, the digesters, the rollers, the pumps for transferring of pulp solution, the dryers, the reelers, the cutters, the motor vehicles, the generators, the machines from the water treatment plant and the wastewater treatment plant cause noise and vibrating impacts to the environment are described as follow:

##### **The Noise and Vibration of the Manufacturing Machines**

The machines and equipment used for rice pulp production including pumps, chipping machines and vibrating screen, etc. generate very high levels of noise and vibrations that can cause noise induced hearing loss to workers.

##### **The Noise and Vibration Because of the Running the Transportation Vehicles**

Transporting raw materials, chemicals, and products also generate noise.

##### **The Noise and Vibration Because of the Running the Generators**

For energy requirement, the generators (400kVA, 315kVA, 250kVA and 150kVA) are used when electricity in failure in this factory. When generators, are driven, the noise and the vibration are generated

#### **6.1.5 Odor Impacts**

During the operation phase, the impacts of odor to the environment are as follow:

##### **From the Vehicles Exhaust**

The vehicles are used for transporting the rice straw, caustic soda, rice husk/saw dust, the machines, diesel, petrol, lubricants. If diesel or petrol used is of inferior quality, e.g. contains sulfur, the odor of SO<sub>2</sub> from the exhaust pipes to the air environment can be detected.

##### **From the Exhaust Pipes of Generators**

If fuel used in the generators contains impurities, the odors can be emitted from the exhaust pipes.

##### **Odor of Black Liquor and the Caustic from the Digester**

To get pulp, the cleaned, chipped, and uniform-sized rice straw is digested with the caustic soda solution and the steam in the digester. When the digested pulp is separated, black liquor is left. The odor of black liquor and the caustic soda is generated by venting out the air from the digester and pouring out black liquor into the Blow pit.

**Odor from the Boiler**

Steam is utilized to digest the rice straw in digester. Steam is produced by combustion of rice husk/saw dust. When rice husk/saw dust is combusted in the boiler, the combusted gas mostly come out from the boiler stack. The odor of combusted gas impacts the surrounding air.

**Odor from the Kitchen**

The odor of combusted gas come out from the kitchen when cooking for the 45 employees stayed in hostel.

During the production process, the impacts to the environment are described in brief as follow:

**6.2 Assessment of Impacts by Emissions**

During the production process, the impacts to the environment are described in brief as follow:

**Table 6.1 Summary of Impacts**

<b>Pollutants</b>	<b>Sources</b>	<b>Cause of description</b>	<b>Effects</b>
<b>Air Pollution</b>			
Toxic and GHG gases, VOC	Vehicles, generators, boiler, transformers, kitchen	<ul style="list-style-type: none"> <li>- CO<sub>2</sub> and water vapor</li> <li>- When the bad quality of fuel is used, SO<sub>2</sub> gas is generated.</li> <li>- When the engine power decreases, the carbon particles and CO gases are generated.</li> <li>- Over-heating of transformer oils</li> </ul>	<ul style="list-style-type: none"> <li>-CO<sub>2</sub> is GHG gas, which causes the global warming.</li> <li>-SO<sub>2</sub>, VOC and CO gases are the severe toxic gases.</li> <li>-Carbon particles cause the respiratory diseases.</li> </ul>
Water vapor	Caustic soda solution preparation, Digestor's air vent out, drying of pulp sheets.	<ul style="list-style-type: none"> <li>-Due to exothermic heat of solution</li> <li>-Temperature is high enough to drive out water as vapor</li> </ul>	-Caustic and lignin ordor make irritation.
Dust	Transportation, cutting, screening of the rice straw, flew-off ash from the combustion of the rice husk/saw dust.	-Diffusion of particles in the surrounding	-Particulate matters cause the respiratory diseases.
<b>Water Pollution</b>			



Wastewater	Daily usage by workers; washing the rice straw; machineries and the tanks; spills from the vibrating screen and the dewatering conveyor; from the wastewater treatment plant and kitchen	-COD, BOD and TSS values of the wastewater generated are high.	- Damage the ecosystem of surrounding water. - Battery acids decrease the pH values of the water
Oil Spillage	Accidental spillage of transformer oil, lubricant, battery acid, diesel and the petrol		- Oily layer on the water surface prohibits entering of oxygen and light into water
<b>Soil Pollution</b>			
Dust, particulate matters from chipping and screening;  bottom ash; kitchen wastes office wastes;	From production line  From Boiler From Kitchen Office	-If not systematically manage, the pieces of pulp and fibers when swept away by rain may cause the high the COD, BOD values of the receiving water	-Risk of fire hazards; respiratory diseases.
<b>Noise and Vibration</b>			
Noise	-Operating the generators; chipping machines, pumps, the rollers, dryers, and the cutters -Driving the transportation vehicles and driving the rice straw conveyors		-Nuisance and audio disturbance.
Vibration	-Vibrating Screen		

### 6.3 Hazardous Substances

In **Nilar Pulp and Paper Co., Ltd. (URSP Mill)**, the hazardous substances are as follow

- Caustic Soda
- Lubricant and Diesel
- Battery Acid.

The dangerous emission as follow



- Salt solution
- Combusted gases
- Carbon monoxide
- Sulfur dioxide
- Transformer oil.

General hazardous properties of caustic soda described as follow and details in Appendix (1).

#### **Caustic Soda**

Hazard	-May cause severe irritation or burns to eyes, skin, gastrointestinal tract, respiratory system. - Risk of serious damage to eyes. -Prolonged skin contact may defat the skin and produce dermatitis.
--------	--

#### **Lubricants**

Hazards	-Irritation of eyes, skin -Flammable at high temperature
---------	---

#### **Diesel oil**

Hazards	-Combustible liquid -Eyes, skin, stomach, aspiration irritation -Breathing high concentration can cause dizziness, headache and vomiting or loss of consciousness
---------	---

#### **Battery Acid**

Hazard	-Eyes, skin, irritation, severe damage to eyes -Inhalation and ingestion may cause damage to health -Risk of lung cancer
--------	--

#### **The General materials**



In this factory, the lubricants are used in various machines such as conveyors, digesters, pumps, roller, forklift, vehicles and electric generators. If it does not been kept systematically, they reach to the environmental and inhibit the light and air entrance into the underwater and underground. Besides, if the battery acids used in the batteries of vehicles does not been handled systematically, impacting the employees and changing the pH values of water and soil can occur. In the water treatment system, the salt is used for regeneration of resins. The salt solution may cause the metal corrosion and so it is needed to systematically management. Moreover, the combusted gases from the vehicles and the generator cause the global warming. The incomplete combustions and the emitted sulfur dioxide and the carbon monoxide by using bad quality fuels are toxic gases. The transformer oils may lead to cancer.

#### **6.4 Description of Proposed Mitigation Measure**

The proposed mitigation measures to reduce the adverse impacts to the environment are discussed for air pollution, water pollution, solid wastes and noise and vibration pollution.

##### **6.4.1 Mitigation Measures for Air Pollution**

**Table 6.2 Mitigation Measures for Air Pollution**

<b>Air Pollution</b>
<b>Odors of The Vehicles' Exhaust Gases</b>
<b>Mitigation Measures</b> -Due to the transportation of rice straw, machines, fuels and the employees by the trucks, trolley, cars and the wheel loader, the air pollutants such as CO <sub>2</sub> , CO, SO <sub>2</sub> and carbon particles are emitted. -Thus, it is necessary systematic management to reduce the vapor emissions to the air. -For example: carpool with each other instead of driving separately, reducing the usage of vehicles, maintain the vehicles – get regular tune-ups, follow the manufacturer's maintenance schedule, and use the recommended motor oil, usually managing the engine power of the vehicles and the machinery good power condition. -To reduce SO <sub>x</sub> emissions, use vehicles that are more efficient and less polluting and good quality fuels. - The emitted carbon dioxide gas and the water vapor can be reduced by planting trees inthe factory backyard
<b>Odors of Generators' Exhaust Gases</b>

**Mitigation Measures**

- The generators are used for emergency back-up when power fails. Generator exhaust contains high levels of carbon monoxide (CO), a poisonous gas that cannot be seen or smelled.
- Deadly levels of carbon monoxide can build up in enclosed or partly enclosed areas.
- To be high efficiency of engine power and routine maintenance is carried out.
- The generator *must* be at least 20 ft away from the workplace.

**Leakage of Gases from Transformers**

**Mitigation Measures**

- To reduce the leakage of gases from the transformers, the air-conditioners and the refrigerators, regular checking of the condition of transformer oil or refringentis needed.

**For Transformers**

- A leak in the radiator had caused the transformer oil level to drop below the radiator inlet, resulting in a virtual total loss of cooling.
- In other cases, investigations of elevated transformer temperatures have revealed blocked coolers and malfunctioning cooler controls.
- An oil level gauge is required so that the correct oil level can be maintained.
- Maintaining the proper oil level is extremely important because if the oil level falls below the level of the radiator inlet, flow through the radiator will cease and the transformer will overheat.

**For Refrigerators**

- Introducing measures to make the detection of leakage much easier is the quickest way for reducing refrigerant emissions.
- The use of lower Global warming potential (GWP) refrigerants, including natural alternatives such as ammonia, CO<sub>2</sub> or hydrocarbons, systematically managing the handling of air-conditioners and refrigerators, for example: installing the refri-guard (safe-guard).
- And alternative system configurations and technologies reduce the emissions.

**Particulate matters From the Loading, Storing, Chipping, Screening of Rice Straw**

**Mitigation Measures**

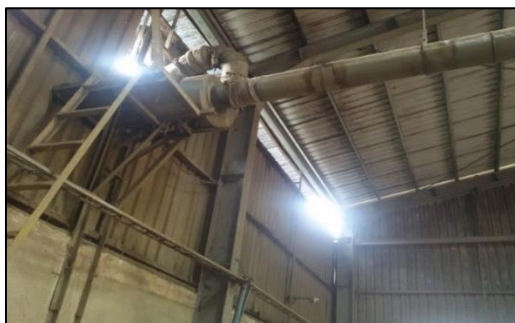
- The dust and the particulate matters are emitted to the air by transporting the raw rice straw, storing, loading by conveyors, chipping and screening and these are trapped by vacuum chamber not to escape to the surrounding, and undersized straw chips are collected and used as fuel in the boiler combusting house.
- The ash particles from boiler chimney are caughted in cyclone separator and water scrubber so that reduced the impacts.
- The ashes from combusting chamber are disposed under management of Industrial Zone Committee and City Development Committee.
- The figure of vacuum chamber and firing the dust are shown in *Figure 6-1* and *6-2* respectively.

**Vapors from the Dissolving the Caustic Soda**

<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-When caustic soda flakes are dissolved in the water, fumes are emitted to the air because the dissolving the caustic soda in water liberates heat.</li> <li>-Slow addition of caustic soda flakes does not increase temperature very much resulting less fumes.</li> </ul>
<p><b>Vapors and odors from releasing the entrapped air and discharging the digested pulp into the Blow Pit</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-When the rice straw is digested in the digester, the entrapped air in the digester is blown out to get the steam pressurefully.</li> <li>-Fumes from caustic soda solution, and VOC from discharging the digester contents to the Blow pit are entrained by the released air.</li> <li>-These are trapped by double steps catch-all system.</li> <li>-This system is shown in <i>Figure 6-3</i>.</li> <li>-The black liquor and the pulp contained with the vapors are recycled to the Blow pit and thus the impacts to the environment are decreased.</li> <li>-This black liquor and the pulp recycled pipe are shown in <i>Figure 6-4</i>.</li> </ul>
<p><b>Combustion Gases and Particulate Matters from Boiler Stack</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The boiler burns the rice husk/saw dust to generate the required steam for digestion.</li> <li>-The good induced draft fan is used forgetting complete combustion to reduce the unburnt fuel and carbon monoxide in the stack gas.</li> <li>-To reduce the spreading of the fly ash from the boiler stack, the cyclone scrubber is used. (See <i>Figure 6-5, 6-6 and 6-7</i>).</li> <li>-The combustion gases of the boiler stack are measured on 6th June 2018.</li> <li>-The results and recorded photos are shown in 5.2.4.</li> <li>-By the results, the values are within the standards.</li> </ul>
<p><b>Ashes of Rice Husk/Saw Dust</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The ashes of rice husk/saw dust are mostly generated from the boiler fire chamber.</li> <li>-These ashes are taken out systematically and are disposed according to the instructions of the Yangon City Development Committee and the Industrial Zone Committee and then YCDC keeps these ashes.</li> <li>-Disposing the ashes by wheel loader and keeping them by YCDC are shown in <i>Figure 6-8</i>.</li> </ul>
<p><b>Vapors from the Kitchen</b></p>
<p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>-The odors from the kitchen are reduced by providing good ventilation and cooking beyond the duty time of the employees.</li> </ul>



**Figure 6-1 (a): Vacuum Chamber**



**Figure 6-1 (b): Vacuum Chamber Pipe to Outdoor Dust Collector**

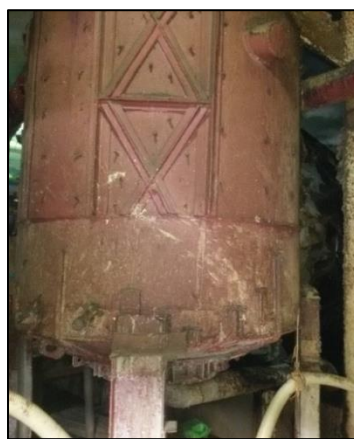


**Figure 6-1 (c): Dust Collecting**





**Figure 6-2: Dust Firing**



**Figure 6-3: Catch All Tank**



**Figure 6-4: Return Pipe**



**Figure 6-5: Cyclone Scrubber**



**Figure 6-6: Water Receiving Pond**



**Figure 6-7: Chimney**



**Figure 6-8: Carrying of Rice Husk/Saw Dust Ash**

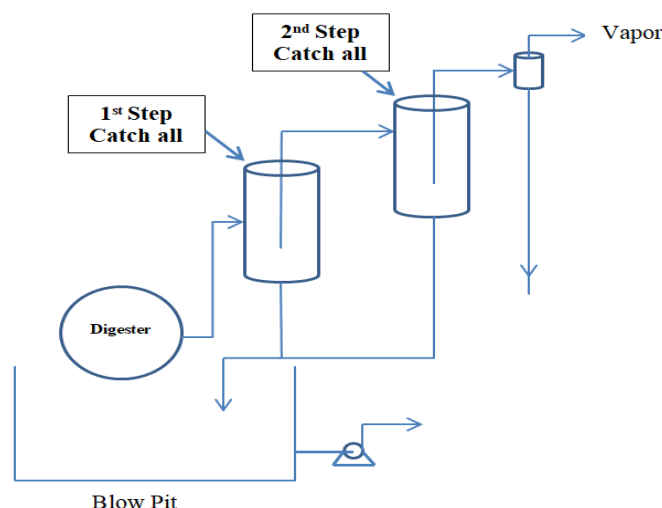
**6.4.1. (a) Explanations of the Review and Suggestion 6-B by the Environmentl Conservation Department Upon the EMP Report Prepared December 2018**  
**Review and Suggestion**

**State the plan of performance upon the combusted gas and vapor from the combustion chamber**

- Vapour, combusted gas and vapor from the combustion chamber is caught by cyclone separator in first, by water scrubler in second and high chimney in third to reduce the entrainment of small particles.

**Explain about double Catch all system**

Double catch all system means the system that to catch the entrainment in two steps. Rough flow diagram as follow:



When reducing the digester pressure, some liquid entrained with vapour and if there is no entrainment catching system, the entrained liquid emitted to air, water and soil. If entrainment can release and collected entrainment was returned to blow pit and further processes to be continued.

#### 6.4.2 Mitigation Measures for Water Pollution

**Table 6.3 Mitigation Measures for Water Pollution**

<b>Water Pollution</b>
<b>Wastewater from The Employees' Daily Usage</b>
<b>Mitigation Measures</b> -The office staffs, pulp manufacturing staffs, the security staffs, and the hostel stayed staffs use the water daily and the wastewater from employees' water usage passes through the septic tanks, the drains and is generated to the water environment. -The impacts are decreased by the flush water of toilets is decomposed naturally in the septic tanks and is generated to the water environment, and education and uniting the employees to reduce the over usage of water.
<b>Impacts by Transformer Oils, Lubricants, and Battery Acids</b>
<b>Mitigation Measures</b> -When the transformer oils, the lubricants and the battery acids are refilled, renewed, reducing the spills, systematically keeping and selling the used materials, systematically disposing the materials that cannot be sold in the specific areas of YCDC are done by the skilled workers and like this, the impacts by them are decreased
<b>Washed Waters of Machines, Tanks, Rice Straw, and the Pulp</b>

**Mitigation Measures**

- The wastewater generated by washing the tanks, the machines, the rice straw; filtering the water; washing the digested rice straw; and squeezed out the water are treated in the wastewater treatment plant and are disposed and so, the impacts by these wastewater are decreased.
- The wastewater treatment flowchart and the photos are shown in *Figure 6-9*.
- At that current condition, the waste water was sampled on the date 15-2-2018 at the outlet from factory compound and analyzed at GMES laboratory and some parameters were analyzed at Ecological laboratory.
- The photo of wastewater collection, results of analysis and place of sampling are shown as attach.
- Photos of wastewater collection, place of sampling were shown at *Figure 6-10-1* and *6-10-2* respectively.

**Impacts By The Boiler Blow-Down Water**

**Mitigation Measures**

- When the boiler used to generate the steam run for a long time, the impurities are cumulated in the water in boiler.
- The lifespan of the boiler is longer by disposing some parts of water.
- The impacts are decreased by disposing the sufficient amount of the boiler blow-down water not more or less.

**Industrial Effluent to The Environment**

**Mitigation Measures**

- The wastewater generated from the Nilar Pulp and Paper Co., Ltd. (URSP Mill) was collected and analyzed; results, sampling photos, sampling points are already reported at above Paragraph.
- According to the analyzed results, BOD, COD, TSS and pH are out of range by comparing NEQ(E)G guideline values.
- So, the said factory plans the wastewater treatment for the best results with the low temperature incineration process.
- The current wastewater treatment flowchart is already shown in *Figure 6-9*.



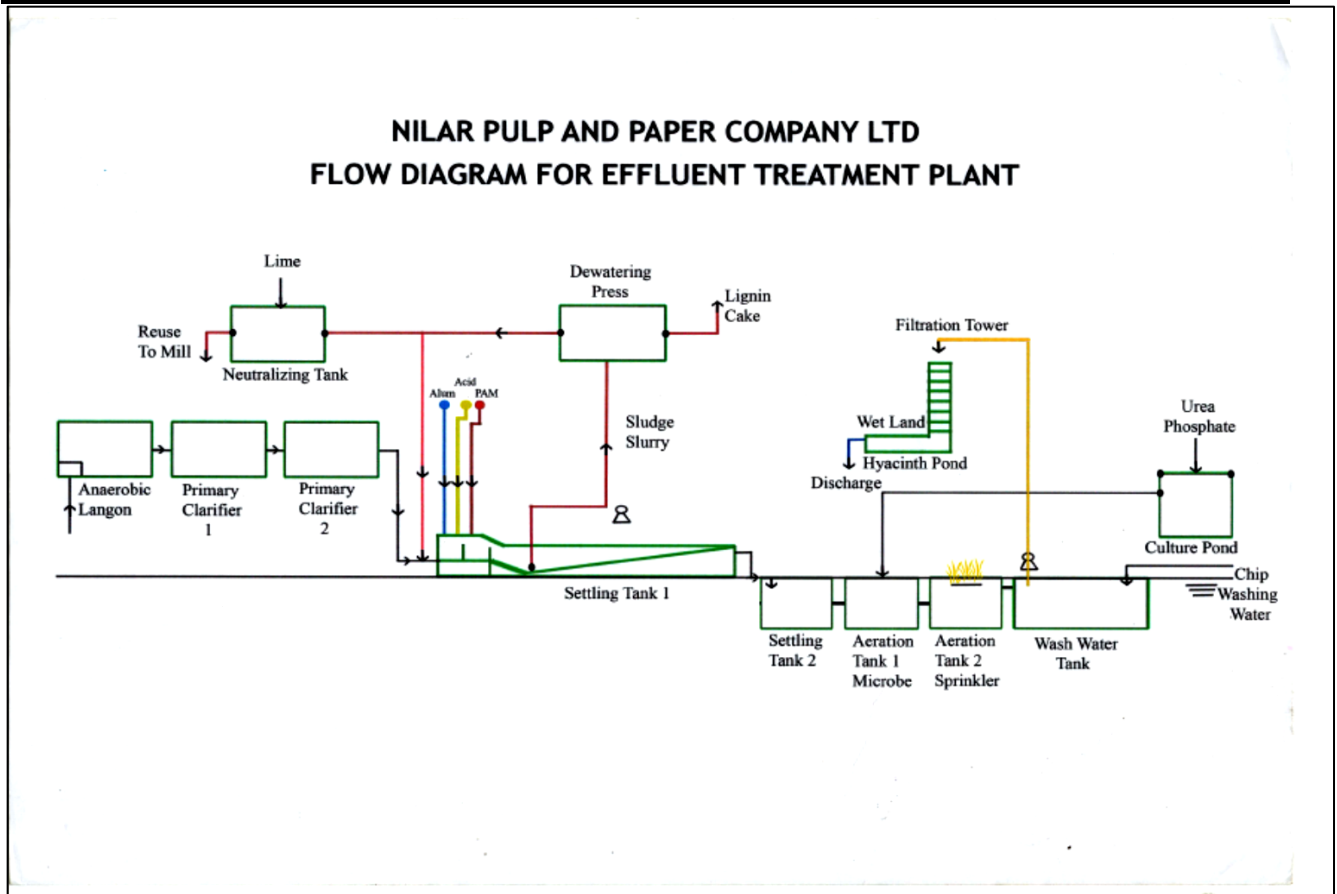


Figure 6-9-1: Wastewater Treatment Flowchart



Figure 6-9-2: Wastewater Treatment Plant



# Green Myanmar

## Environmental Services Co., Ltd

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 Yangon, Myanmar  
 Tel: 01-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescorpany@gmail.com](mailto:gmescorpany@gmail.com)

Name of Client : Nilar Pulp and Paper Mill Date of Arrival at Lab : 18.2.2018

Date of Collection : 15.2.2018

Date of Issue of Results : 28.2.2018


### Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Wastewater	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			စနစ်ပစ္စည်း	
1.	5-day Biochemical Oxygen Demand	kg/ADt	1176	0.7
2.	Chemical Oxygen Demand	kg/ADt	3130	10
3.	pH	-	13.1	6-9
4.	Total Suspended Solids	kg/ADt	1034	1


ND-Not Detected

ADt - Air dried metric ton


Analyzed By

  
**Daw Aye Thuzar Hein**  
 Technician (Laboratory)

Checked By

  
**Daw Wint Phyu Htway**  
 Incharge (Laboratory)

Approved By

  
**Daw Cherry Thwin**  
 Manager (Laboratory)

**Comparison Data of Analyzed Results of Wastewater with Guideline Values of Pulp and Paper Mill (Unbleached kraft Pulp, Integrated) under National Environmental Quality (Emission) Guidelines Standards**

Sr. No.	Parameter	Unit	Analysis result of wastewater	Guideline Values of Pulp and Paper Mill (Unbleached kraft Pulp, Integrated)	Less/ More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	1176	0.7	+ 1175.3	
2.	Chemical Oxygen Demand	Kg/ADt	3130	10	+ 3120	
3.	pH	-	13	6~9	Over range	
4.	Total Suspended Solids	Kg/ADt	1034	1	1033	





**ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း**  
**Ecological Laboratory**



စိမ်းလန်းအသိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

Reference Number/ စာအမှတ်: EL-R / 02136

Date / နေ့စွဲ: 28 February, 2018

**Laboratory Analysis Report /ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ**

**Sample Profilesနမူနာရာဇဝင်**

နမူနာအမည် / Sample Name	စွန့်ပစ်ရေ	နမူနာအမှတ် / Sample ID	3444
နေရာ (မြို့နယ်) Location (Township)	ဒဂုံဆိပ်ကမ်း	လတ္တီတွဒ် Latitude	
နေရာ (တိုင်း/ပြည်နယ်) Location (Division/State)	ရန်ကုန်	လောင်ဂျီတွဒ် Longitude	
ပေးပို့သူအမည် Sender Name	Nilar Pulp and Paper Mill (GMES)	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	15.2.2018
အဖွဲ့အစည်း Organisation	-	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	19.2.2018
ဆက်သွယ်ရန် Contact	09253083501		

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာသည် ပေးပို့သူမှပိုမိုဆောင်ရွက်သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

**Analysis Results စမ်းသပ်ချက်အဖြေ**

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ်အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	စွန့်ရေ စံနှုန်း Effluent Standard	မှတ်ချက် Remarks
၁	ချဉ်ဖန်ကိန်း (pH)	10.8	pH meters	6.5 – 8.5	6.0 – 9.0 *	In Base Range
၂	ဇီဝဆိုင်ရာ အောက်ဆီဂျင်လိုအပ်ချက် (BOD <sub>5</sub> )	4930 mg/L	Estimated by Eco-Lab with Jenway Dissolved Oxygen Meter (Model 970)	≤ 3 mg/L	≤ 50 mg/L *	Above the limits
၃	ဓာတုဆိုင်ရာ အောက်ဆီဂျင်လိုအပ်ချက် (COD)	>15000 mg/L	Lovibond SpectroDirect Method No. 130, 131, 132	NG	≤ 250 mg/L *	Above the limits

\* Myanmar Emission Guideline 2015

NG=No Guideline

ND= Not Detected

စမ်းသပ်ပြီး Tested by

စစ်ဆေးပြီး Checked by

တာဝန်ခံ Approved by

Daw May Myat Khine  
 Lab. Technician II  
 Ecological Laboratory  
 ALARM

Daw Lin Myat Aye  
 Lab. Technician I  
 Ecological Laboratory  
 ALARM

Dr. Aye Aye Win  
 Project Team Leader  
 Ecological Laboratory  
 ALARM

(This report shall not be reproduced except in full, without written approval of the laboratory)

(ဤစာတမ်းသည် စာတမ်းရေးသားရေးရာအဖွဲ့၏ ရေးသားချက်အပေါ် အခြေခံထားပြီး တစ်စိတ်တစ်ပိုင်း ဖြတ်ယူအသုံးပြုခြင်း၊ ပြုပြင်ဆင်ခြင်ခြင်းမပြုလုပ်ရ)

A-2, Kan Street, Hlaing Township, 11051, Yangon, Myanmar. Tel: +95 1 503301 | Fax: +95 1 503302  
 Email: [alarm.myanmar@gmail.com](mailto:alarm.myanmar@gmail.com) | website: [www.myanmaraffairs.com](http://www.myanmaraffairs.com)





Figure 6-10-1: Wastewater Collection

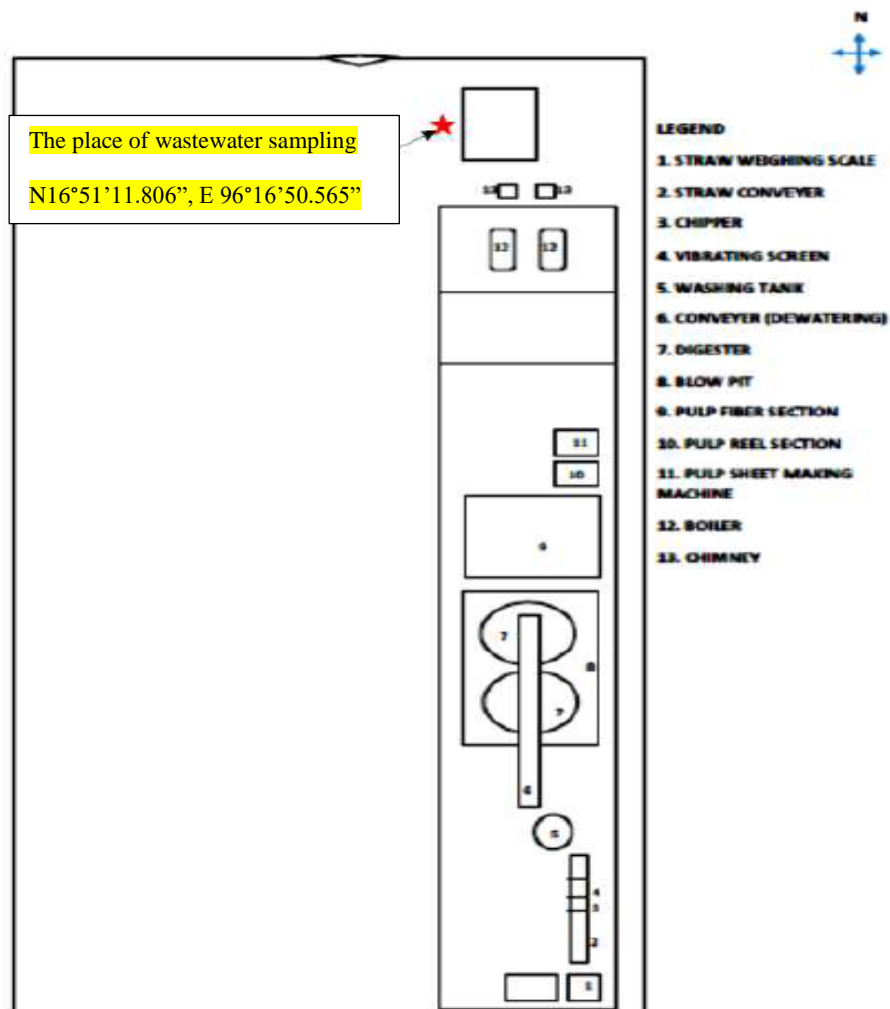


Figure 6-10-2: The photo of wastewater sampling point

The analysis of straw wash water and the outlet of thickener are following:



# Green Myanmar

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Name of Client : Nilar Pulp and Paper Mill Date of Arrival at Lab : 6.8.2018

Date of Collection : 6.8.2018

Date of Issue of Results : 16.8.2018

## Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Wastewater	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			Straw Wash Outlet	
1.	5-day Biochemical Oxygen Demand	kg/ADt	150	0.7
2.	Chemical Oxygen Demand	kg/ADt	300	10
3.	pH	-	7.6	6~9
4.	Total Suspended Solids	kg/ADt	169	1

ND-Not Detected

ADt - Air dried metric ton

Analyzed By

**Daw Aye Thuzar Hein**  
 Technician (Laboratory)

Checked By

**Daw Wint Phyu Htway**  
 Incharge (Laboratory)

Approved By

**Daw Cherry Thwin**  
 Manager (Laboratory)



**Comparison Data of Analyzed Results of Wastewater (Straw Wash Outlet) with Guideline****Values of Pulp and Paper Mill (Unbleached kraft Pulp, Integrated) under National  
Environmental Quality (Emission) Guidelines Standards**

Sr. No.	Parameter	Unit	Analysis result of wastewater (Straw Wash Outlet)	Guideline Values of Pulp and Paper(Unbleache d kraft Pulp, Integrated)	Less/ More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	150	0.7	+ 149.3	
2.	Chemical Oxygen Demand	Kg/ADt	300	10	+ 290	
3.	pH	-	7.6	6~9	Between standard	
4.	Total Suspended Solids	Kg/ADt	169	1	+ 168	



# Green Myanmar

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115, Kanaung Min Thar Gyi Road, Industrial Zone (1), Hlaing Thar Yar Industrial City,  
 Yangon, Myanmar  
 Tel: 09-3685572, 01-3685571, 09-5081451, 09-5122448 E-mail: [gmescompany@gmail.com](mailto:gmescompany@gmail.com)

**Name of Client:** Nilar Pulp and Paper Mill **Date of Arrival at Lab :** 6.8.2018

**Date of Collection :** 6.8.2018

**Date of Issue of Results :** 16.8.2018

### Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015)
			Type of Wastewater	Pulp and Paper Mill (Unbleached kraft pulp, integrated)
			First Thickener Outlet	
1.	5-day Biochemical Oxygen Demand	kg/ADt	1050	0.7
2.	Chemical Oxygen Demand	kg/ADt	3778	10
3.	pH	-	10.2	6-9
4.	Total Suspended Solids	kg/ADt	952	1

ND-Not Detected

ADt - Air dried metric ton

**Analyzed By**

**Daw Aye Thuzar Hein**  
**Technician (Laboratory)**

**Checked By**

**Daw Wint Phyu Htway**  
**Incharge (Laboratory)**

**Approved By**

**Daw Cherry Thwin**  
**Manager (Laboratory)**

**Comparison Data of Analyzed Results of Wastewater (First Thickener Outlet) with Guideline**

**Values of Pulp and Paper Mill (Unbleached kraft Pulp, Integrated) under National Environmental Quality (Emission) Guidelines Standards**

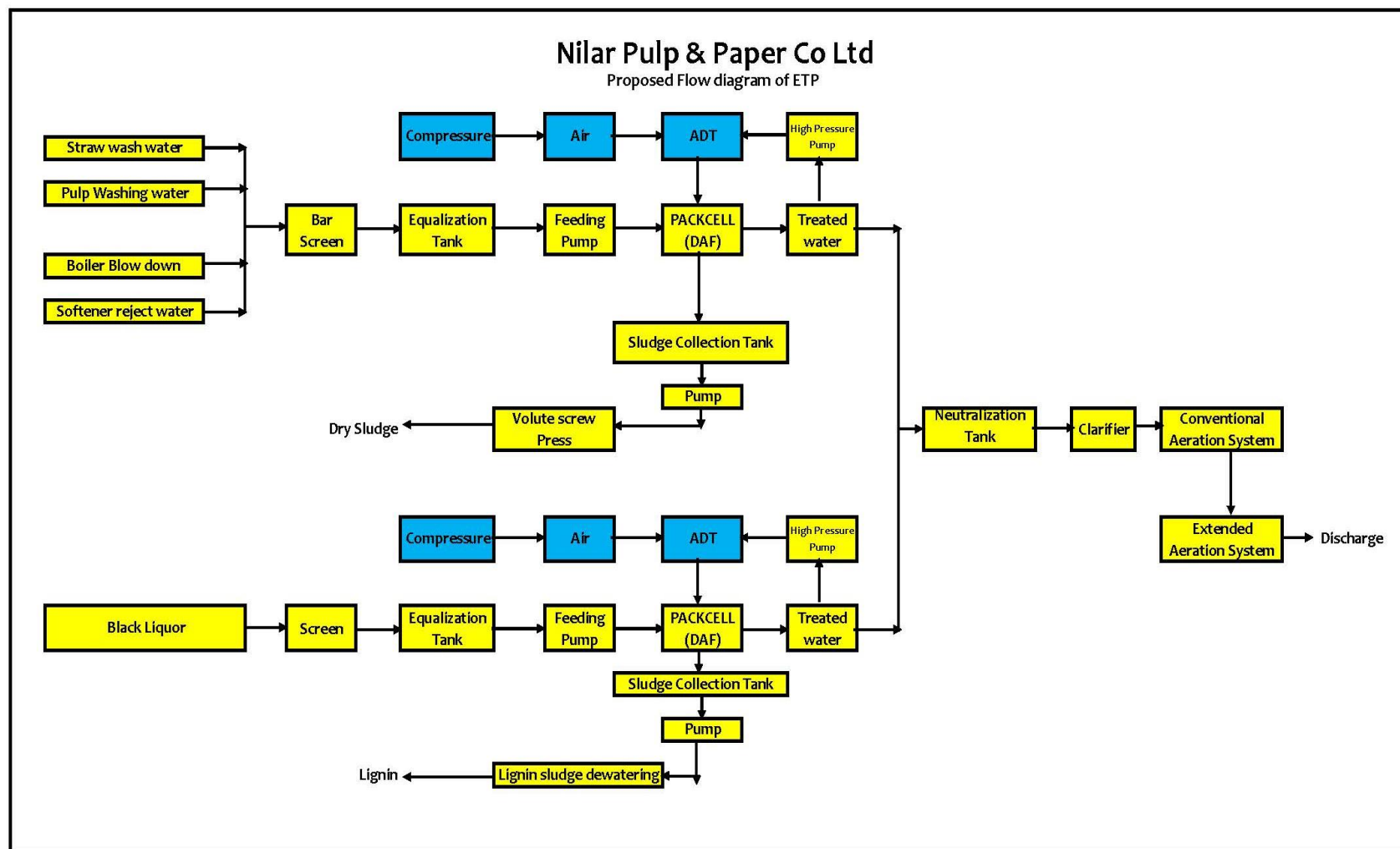
Sr. No.	Parameter	Unit	Analysis result of First Thickener Outlet	Guideline Values of Pulp and Paper(Unbleached kraft Pulp, Integrated)	Less/ More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	1050	0.7	+ 1049.3	
2.	Chemical Oxygen Demand	Kg/ADt	3778	10	+ 3768	
3.	pH	-	10.2	6~9	Over range	
4.	Total Suspended Solids	Kg/ADt	952	1	+ 951	

**In Continuation of our Environment Management Plan, We Make an Action Plan to install Water Pollution Control System are as Following-**

1 <sup>st</sup> Stage	2019-2021	2. Natural sedimentation of straw wash water and black
	2021-2022	3. Straw wash water treatment with Dissolve Air Flotation (DAF) system along with Sludge Management System. 4. Natural sedimentation of Black liquor
2 <sup>nd</sup> Stage	2022-2024	2. Black Liquor Treatment with Dissolve Air Flotation System (DAF) along with sludge management system.
3 <sup>rd</sup> Stage	2024-2026	2. Activated sludge process (Aeration System) treatment for DAF treated water of Straw wash water and DAF treated water Black liquor.



Proposed Flow Diagram of ETP (2024-2026)







The advisor of G.M.E.S guess that the low temperature incinerator with MEE system should be suitable (i) new technology and difficult controllable microorganism not include (ii) if annual fuel consumption expenditure and chemical recovery return are balanced.

**The environmental management plan for Nila pulp and paper Co. Ltd., URSP Mill was prepared by GMES team on 2018 December and it was submitted to ECD on 13.2.2019 by factory. One of the ECD command upon report that all parameters of wastewater should be analyzed was performed as follow.**

On 2020, January 16 GMES team took and wastewater samples and analyzed the all parameter of pulp and paper unbleached kraft pulp, integrated and images of sampling, place of sampling, results and comparison of results with NEQ (E) G guideline are described as following.



**Figure 6-10-3: Wastewater (Factory out) Collection**

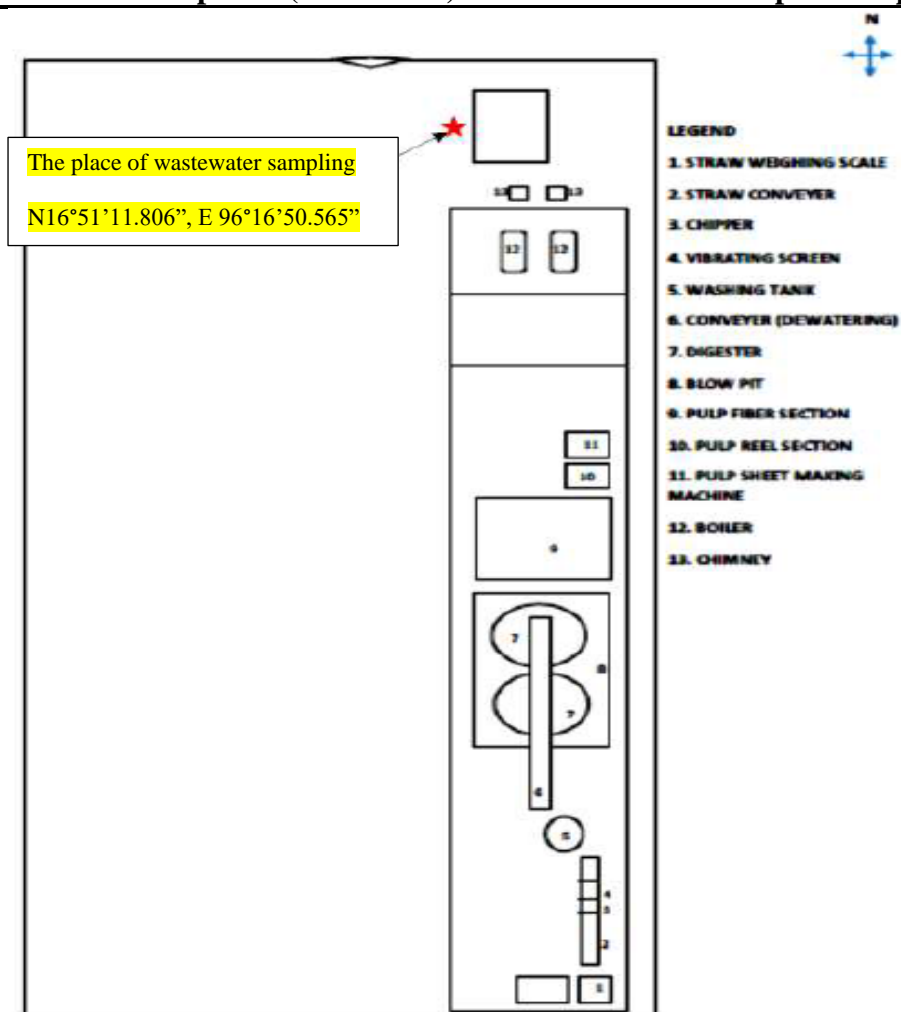


Figure 6-10-4: The photo of wastewater (Factory out) sampling point (16.1.2020)



# Green Myanmar

## Environmental Services Co., Ltd

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Yangon, Myanmar  
Tel: 09-89-7978-296, 01-3685572, 09-5081451 E-mail: [gmescorpany@gmail.com](mailto:gmescorpany@gmail.com)

Project Name: Nilar Pulp and Paper Co., Ltd. (URSP Mill)

Sampling Location: Dagon Seikkan Township

Sample ID: ၀၀၆၃၀၀၇၇

Latitude: N 16° 51' 11.606"

Longitude: E 96° 16' 50.568"

Date of Collection: 16.1.2020

Date of Arrival at Lab: 16.1.2020

Date of Issue of Results: 23.1.2020

### Laboratory Analysis Results of Wastewater

Sr. No.	Parameters	Unit	Analysis Value	National Environmental Quality (Emission) Guidelines (2015) Pulp and Paper Mills Unbleached Kraft Pulp, Integrated
1.	5-day Biochemical Oxygen Demand	kg/ADt	660	0.7
2.	Chemical Oxygen Demand	kg/ADt	1330	10
3.	pH	-	8	6-9
4.	Total Nitrogen	kg/ADt	12	0.2
5.	Total Phosphorous	kg/ADt	2.1	0.02
6.	Total Suspended Solids	kg/ADt	413	1

\*ND – Not Detected

Analyzed By

U Thet Min Paing  
Technician (Laboratory)

Approved By

Daw Cherry Thwin  
Manager (Laboratory)



**Comparison Data of Analyzed Results of Wastewater (Factory Outlet) with Guideline Values of Pulp and Paper Mill unbleached kraft Pulp Integrated under National Environmental Quality (Emission) Guidelines Standards**

Sr. No.	Parameter	Unit	Analysis result of wastewater (Factory outlet)	Guideline Values of Pulp and Paper	Less/More	Remark
1.	5 day Biochemical Oxygen Demand	Kg/ADt	660	0.7	+ 659.3	
2.	Chemical Oxygen Demand	Kg/ADt	1330	10	+ 1320	
3.	pH	-	8	6~9	Between standard	
4.	Total Nitrogen	Kg/ADt	12	0.2	+ 11.8	
5.	Total Phosphate	Kg/ADt	2.1	0.02	+ 2.08	
6.	Total Suspended Solids	Kg/ADt	413	1	+ 412	



## ALARM Ecological Laboratory

### Water Testing Result Report



Report Number : EL-WR / 04021		Date : January 22, 2020			
<b>Client Information</b> Client Name : Nilar Pulp and Paper Co.Ltd Organization : GMES Client ID : - Registration Date & Time : 17.1.2020 ; Contact : 09490988890 Testing Purpose : -		<b>Sample Information</b> Sample ID : 6142 Sample Name : ဝတ်နီဆည်မြစ်ရေ Sample Type / Source : Treated Sampling Date & Time : 16.1.2020 ; Sample Location : ဝတ်နီမြစ် Latitude : - Longitude : -			
<b>Testing Results</b> This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service. This report shall not be reproduced except in full, without written approval of the laboratory.					
Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH <sup>1</sup>	7.7	S.U	6.0 – 9.0 <sup>d</sup>	Normal
2	TSS <sup>2</sup>	1820	mg/L	≤50 <sup>d</sup>	Above the limit
3	COD <sup>3</sup>	19480	mg/L	≤ 250 <sup>d</sup>	Above the limit
"ND" = Not Detected      "LOD" = Lower limit of detection      " - " = No Reference Standard					
Tested by		Checked by		Approved by	
Daw Myat Myat Khine Lab. Technician II Ecological Laboratory ALARM		Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM			

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Email: aelab@alarmmyanmar.org , websites: www.alarmmyanmar.org

### 6.4.3 Mitigation Measures for Soil Pollution

In **URSP Mill**, the mitigation measures of the impacts by the solid wastes are described as follow:

**Table 6.4 Mitigation Measures for Soil Pollution**

<b>Soil Pollution</b>
<b>General Solid Wastes</b> <b>Mitigation Measures</b> -The used solid wastes (e.g. the worn out papers, the old and ruined stationery, and the personal wastes of the employees – for example: the packaging materials of food, the rest foods) are kept in the dustbin with lid and firing them in boiler if they can be fired and if not, these solid wastes are disposed in the specific areas of YCDC. -The dustbin with lid is shown already in <i>Figure 4-80</i> .
<b>Dust from Loading, Storing, Chipping, and Screening the Rice Straw</b> <b>Mitigation Measures</b> -In Nilar Pulp and Paper Co., Ltd. (URSP Mill), the impacts are decreased by the rice straw, dust, particles and undersized straw pieces generated by transporting the raw rice straw, storing, loading the rice straw by the conveyors, chipping, screening are trapped in the vacuum chamber not to escape the surrounding, and the undersized materials from the screen are collected and fired and are disposed in the specific areas of YCDC and Industrial Zone Committee.
<b>Solids Suspended in the Wastewater</b> <b>Mitigation Measures</b> -The solid wastes involved in the washing water of rice straw, and the pulp are removed and cumulated in the Primary Clarifier-1, Primary Clarifier-2, Settling Tank-1 and Settling Tank-2 of the wastewater treatment plant and are disposed in the specific areas of YCDC. -By doing like this, the impacts by them are decreased.
<b>The Packing Materials from Manufacturing Process</b> <b>Mitigation Measures</b> -In Nilar Pulp and Paper Co., Ltd. (URSP Mill), the impacts are decreased by the packing materials of the materials used for manufacturing process (e.g. the bags of caustic soda, the packs of lubricants, the binding wires to tie the rice straw, the gunny ropes, the binding wire cuts of packaging of finished goods) are kept systematically and are sold if they can and if they cannot, these materials are disposed in the specific area of YCDC.
<b>Ashes of Rice Husk/Saw Dust from the Boiler</b>

<b>Mitigation Measures</b> -The emitted ashes of rice husk/saw dust from the boiler fire section and these ashes are cleaned by the plan of YCDC and Industrial Zone Committee and so, the impacts are decreased by these actions.
<b>Trimmings of Pulp Sheets</b>
<b>Mitigation Measures</b> -When the 30" × 20" pulp sheets production is processed from Nilar Pulp and Paper Co., Ltd. (URSP Mill), the trims of pulp sheets are dissolved with water in Hydro Pulper and recycled to the vat-1,2 and is reused in the pulp sheets production process and so, the impacts are decreased by these actions.
<b>Solid Wastes from The Kitchen</b>
<b>Mitigation Measures</b> -In this factory, the solid wastes such as the packed materials of meat, vegetables and the rest foods are kept systematically and are disposed by the plan of YCDC to reduce the impacts by these materials.
<b>Solid waste from maintenance section</b>
<b>Mitigation Measures</b> -In this factory, solid wastes from maintenance section are collected systematically and sold out if not disposed by guideline of Industrial Zone Committee and YCDC.

#### **6.4.4 Mitigation Measures for impacts of Noise and Vibration**

URSP Mill is situated in the industry zone of Dagon Seikkan and the garages are in front and the rear of factory, the concrete factory is in the south, and the wood cutting factory is in the north of factory. Thus, noise and vibration impacts are accumulative to the environment due to these Concrete Batching Plant and Saw-mill. When the noise of workplace is measured, the measured amounts are more than the standards values in all three places. The noise impact to the employees needs to be managed. The mitigation measures for noise are described as follow.

**Table 6.5 Mitigation Measures for Noise and Vibration**

<b>Noise and Vibration Impacts</b>
<b>Transportation of Vehicles</b> -The vehicles are used to transport rice straw, rice husk, saw dust, lubricants, diesel, petrol, employees and pulp sheets. -Because of using the cars, the trolley and wheel loader, the noise and the vibration are caused. -The noise and the vibration can be decreased by repairing and checking the toughness of the vehicles; the power of the vehicles, the suspension of the car body, the exhaust pipes and the silencers. -The impacts to the environment are decreased by avoiding the leisure time of the employees.
<b>Operation of machineries</b>



-Transporting the rice straw; chipping; processing the vibrating screen and the digester; blowing out from the digester; the driving of the pulp pumps, the pulp squeeze machines, the pulp cleaners, the press drum of pulp and the cutters of the pulp sheets; the driving of the boiler induced draft fans and the blowers of the putting the rice husk/saw dust make noise.

-The alignment of the machines, the toughness, refilling the lubricants, the normal tension of fan belts, and the tightening the foundation bolts and nuts are checked and mended to reduce the impacts by these actions to the environment.

**Provision of PPE**

-Proceeding to wear the protection equipment such as the ear cover and the shoes, and the hats for the employees; transferring the duty places not to be long time working in one place are processed to reduce the impacts by the noise and the vibration.

## **6.5 IMPACTS ASSESSMENT AND MITIGATION MEASURES**

### **6.5.1 Nature of Impact**

The environmental conditions of Nilar Pulp and Paper Co., Ltd (URSP-Mill) are mentioned at present section, such as impacts on air, soil, water, noise and odor during production and distribution of product. The impacts are classified as positive and negative.

### **6.5.2 Impact Assessment Methodology**

The significance of the impacts of said factory is formed by using the **Plomp (2004) Matrix**. In this method, significance, duration, scale, magnitude and probability are main keys and using the following formula.

$$\text{Significance} = (\text{Duration} + \text{Scale} + \text{Magnitude}) \times \text{Probability}$$

The individual term is explained as following.

#### **6.5.2.1 Duration**

Rate of duration is defined as following table.

<b>Attribute</b>	<b>Description</b>	<b>Weight</b>
Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.	1
Medium term	The impact will last up to the end of the phases, where after it will be mitigated.	3
Long term	The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.	4
Permanent	Impact that will be non-transitory, mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.	5

#### **6.5.2.2 Scale**

Scale is the physical and spatial size of the impact as following rating.

<b>Attribute</b>	<b>Description</b>	<b>Weight</b>
Site	The impacted area extends only as far as the activity, e.g. footprint.	1
Local	The impact could affect the whole, or a measurable portion of the above-mentioned properties.	2
Regional	The impact could affect the area including the neighboring residential areas.	3

### **6.5.2.3 Magnitude/Severity**

Magnitude/ severity mentions, that does the impact destroy environment or alter its function and rating is as following table.

<b>Attribute</b>	<b>Description</b>	<b>Weight</b>
Low	The impact alters the affected environment in such a way that natural processes are not affected.	2
Medium	The affected environment is altered, but functions and processes continue in a modified way.	6
High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.	8

### **6.5.2.4 Probability**

Probability describes the likelihood of the impact actually occurring and rating is as follow.

<b>Attribute</b>	<b>Description</b>	<b>Weight</b>
Improbable	The possibility of the impact occurring is very low, due to the circumstances, design or experience.	1
Probable	There is a probability that the impact will occur to the extent that provision must be made therefore.	2
Highly Probable	It is most likely that the impact will occur at some stage of the development.	4
Definite	The impact will take place regardless of any prevention plans, and there can only be relied on mitigation actions or contingency plans to contain the effect.	5

### **6.5.2.5 Significance**

Significance is an indication of the importance of the impact in terms of both physical extent and time scale and therefore indicates the level of mitigation required and rating is as follow.

<b>Attribute</b>	<b>Description</b>	<b>Weight</b>
Negligible	The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.	< 20
Low	The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.	< 40
Moderate	The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.	< 60
High	The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/ or the cost of management intervention will be a significant factor in mitigation.	> 60

### **6.5.3 Impacts Assessment and Mitigation Measure**

Impacts assessment and mitigation measure on products of unbleached rice straw pulp by URSP-mill are calculated as before mitigation measure and after for environments such as air, water, soil, noise and odor.

#### **6.5.3.1 Calculation of impact significance before and after mitigation measure on air**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The Impacts</b>	Spreading the dust and the particles; the emission of the combusted gases and the leakage of gases; and the emission of bad smells
<b>Risk Assessment</b>	Explosion may undergo when dust, air and spark were together in right composition. Nuisance, eye irritation, respiratory infection, probability suffer cancer.

<b>The Sources of the Impacts</b>	<p>The emitted particulate matters and the gases from the generator exhaust pipes and the cars for transporting the raw material, the finished products, the machines, the employees' ferry</p> <p>The leakage of the gases</p> <p>The emitted dust and the particles from the loading, transporting, chipping and screening of the rice straw</p> <p>The emitted vapors and the odors from disclosing the digester when the rice straw, the caustic soda and the steam are digested in the digester</p> <p>The generating the sulfur dioxide from using the bad quality of diesel</p> <p>The combusted vapors and odors from combusting the rice husk/saw dust fuels</p> <p>The spreading the ashes of rice husk/saw dust</p>
<b>The Impacted Areas</b>	<p>The peoples along through transportation route of raw rice straw, the finished goods and the machines</p> <p>The employees within the factory yard</p>
<b>The Impacted Amount and Duration</b>	<p>The impacted amount is low to the peoples and the impacted duration is short.</p> <p>For the employees, the impacted amount is medium and the impacted duration is longer.</p>
<b>The Mitigation Measures for the impacts</b>	<p>In order to drive powerfully the vehicles, the machines, and the generators, the repairing the machines do systematically; the lubricants are refilled punctually; the toughness is done; and the checking the temperature, the desiccant, and the level of oil of the transformers do.</p> <p>Managing the dust and the particulate matters removing machines in the raw loading, transporting, chipping, screening sections in order to drive powerfully and supervising from the experts.</p> <p>If possible, electrostatic precipitator should be used for dust collection.</p> <p>Being powerful the machine of vapor and particles trapped when the digester is disclosed.</p> <p>Using the good quality of fuels</p> <p>Taking a time to dissolve the caustic soda and the water.</p> <p>To be complete combustion in the boiler by the right ratio of fuel and the air.</p> <p>Being powerful the cyclone particle trappers, and the water-sprayed particle trappers to catch the spread ashes of rice husk/saw dust from the boiler stack.</p> <p>Doing not to cumulate the ashes of rice husk/ saw dust.</p>

Calculation of impact Significance

$$\begin{aligned}\text{on air (Before Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\ &= [ \text{long term (4)} + \text{local (2)} + \text{high (8)} ] \times [ \text{highly} \\ &\quad \text{probable (4)} ] \\ &= ( 4+2+8 ) \times 4 \\ &= 14 \times 4 \\ &= 56 \\ &= < 60 \Rightarrow \text{Moderate}\end{aligned}$$

Calculation of impact Significance

$$\begin{aligned}\text{on air (After Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\ &= [ \text{long term (4)} + \text{local (2)} + \text{low (2)} ] \times [ \text{highly} \\ &\quad \text{probable (4)} ] \\ &= ( 4+2+2 ) \times 4 \\ &= 8 \times 4 \\ &= 32 \\ &= < 40 \Rightarrow \text{low}\end{aligned}$$

6.5.3.2 Calculation of impact significance before and after mitigation  
measure on water

Nilar Pulp and Paper Co., Ltd (URSP Mill)	
<b>The Impacts</b>	<p>The wastewater from the unsystematic disposal of the employees</p> <p>The accidental spills from refilling the lubricants, the transformer oils, and the battery acids</p> <p>The washed waters of the machines, tanks the rice straw and the rice straw pulp</p> <p>The boiler blow-down water</p> <p>The back-washed water and the regenerated water from the water treatment plant</p> <p>The wastewater from the employees' hostel</p> <p>The wastewater from the wastewater treatment plant</p>
<b>Risk Assessment</b>	<p>Due to high BOD, COD, TSS values, the ecosystem changes, pH of surrounding water and soil change light and air are prevent to transmit to under water kingdoms.</p> <p>Battery acid makes pH changes of surrounding water, Corrosion and irritation to metal, skin</p> <p>Carcinogenic</p> <p>Lubricant oil prohibit the light and air to underground water</p> <p>Transformer oil is carcinogenic</p>
<b>The Sources of the Impacts</b>	<p>Be unsystematic; not following the disciplines; breaking the instructions; and the leaking the joints of pipe lines</p>
<b>The Impacted Areas</b>	<p>Along the drain in the factory yard and the drain of industrial zone</p>
<b>The Impacted Amount and Duration</b>	<p>The impacted amount to the factory's environment is medium and the impacted duration is medium long.</p> <p>The impacted amount to the employees is low and the impacted duration is short.</p>

<p><b>The Mitigation Measures for the Impacts</b></p>	<p>Be systematic; following the instructions and disciplines; checking accurately; educating if do not follow; taking the actions; systematically keeping and selling; disposing in the specific areas of YCDC and the Industrial Zone Committee if not sell.</p> <p>Disposing the sufficient amount of boiler blow-down water</p> <p>Doing the sufficient times for back-washing and regeneration of water treatment plant.</p> <p>Doing the treatment of wastewater from the wastewater treatment plant to reach the guidelines of <i>NEQ(E)G</i> by <b>low temperature incinerator and dissolved air floatation processes.</b></p> <p>Educating and be unity not to overuse the water in the employees' hostel and the kitchen</p>
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Calculation of impact Significance

$$\begin{aligned}
 \text{on water (Before Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\
 &= [ \text{long term (4)} + \text{local (2)} + \text{high (8)} ] \times [ \text{highly probable (4)} ] \\
 &= ( 4+2+8 ) \times 4 \\
 &= 14 \times 4 \\
 &= 56 \\
 &= < 60 \Rightarrow \text{Moderate}
 \end{aligned}$$

Calculation of impact Significance

$$\begin{aligned}
 \text{on water (After Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\
 &= [ \text{long term (4)} + \text{local (2)} + \text{low (2)} ] \times [ \text{highly probable (4)} ] \\
 &= ( 4+2+2 ) \times 4
 \end{aligned}$$



$$= 8 \times 4$$

$$= 32$$

$$= < 40 \Rightarrow \text{low}$$

**6.5.3.3 Calculation of impact significance before and after mitigation measure on soil**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The Impacts</b>	The solid wastes from daily used materials of the employees The damaged and used materials from office works, manufacturing process The ruined materials used in manufacturing process The solids from loading, transporting, chipping, screening and washing the rice straw The emitted ashes from the boiler stack The emitted ashes from the boiler combustion chamber The solid wastes from the employees' hostel and the kitchen
<b>Risk Assessment</b>	Composition of soil, water change, Changing the flow direction of stream, river the shallow the depth of water
<b>The Sources of the Impacts</b>	Be unsystematic; and not following the instructions
<b>The Impacted Areas</b>	The peoples near the disposing place of the solid wastes and the factory's environment and the employees
<b>The Impacted Amount and Duration</b>	The impacted amount is low and the impacted duration is short.
<b>The Mitigation Measures for the Impacts</b>	Educating to do systematically; checking; and taking actions Systematically keeping and selling; disposing in the specific areas of YCDC and Industrial Zone Committee

Calculation of impact Significance

on soil (Before Mitigation)

$$= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability}$$

$$= [ \text{long term (4)} + \text{local (2)} + \text{high (8)} ] \times [ \text{highly} ]$$



probable (4) ]

$$= (4+2+8) \times 4$$

$$= 14 \times 4$$

$$= 56$$

$$= < 60 \Rightarrow \text{Moderate}$$

#### Calculation of impact Significance

on soil (After Mitigation)

$$= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability}$$

$$= [ \text{long term (4)} + \text{local (2)} + \text{low (2)} ] \times [ \text{highly probable (4)} ]$$

$$= (4+2+2) \times 4$$

$$= 8 \times 4$$

$$= 32$$

$$= < 40 \Rightarrow \text{low}$$

#### 6.5.3.4 Calculation of impact significance before and after mitigation measure on noise

Nilar Pulp and Paper Co., Ltd (URSP Mill)	
<b>The Impacts</b>	<p>The noise and the vibration from driving the cars to transport the raw, products, the machines, and the employees and the generators</p> <p>Driving the rice straw loaded conveyors, chippers, vibrating screens, digesters, vent out the air from the digester, transfer to blow pit, the pumps, the squeezers, dryers to heat the pulp sheets, the cutters of the pulp sheets, the boiler feed water pumps, the boiler induced draft fans, and the blowers of the rice husks</p>
<b>Risk Assessment</b>	Nuisance and audio Disturbance

<b>The Sources of the Impacts</b>	Bad maintenance to repair the machines (e.g. the impairment of the exhaust silencers; not right aligning the machines; not doing the refilling the lubricants; not tightening the foundation bolts and nuts; not adjusting the belts) and doing hurriedness the steam blowing into the digester.
<b>The Impacted Areas</b>	The peoples along through transportation route of raw rice straw, the finished goods and the machines The employees within the factory yard and near the factory's environment
<b>The Impacted Amount and Duration</b>	The impacted amount to the people is low and the impacted duration is short. The impacted amount to the employees within the factory yard is medium and the impacted duration is long. The impacted amount to the employees near the factory is low and the impacted duration is long.
<b>The Mitigation Measures for the Impacts</b>	Maintenance the exhaust system of the cars and the generators; maintenance of the machines; being good the refilling the lubricants and mending in-time; avoiding to work with the leisure time of the employees; giving the personal protective equipment for the employees; and no longer the duty time in the noisy place for the employee

Calculation of impact Significance

on noise (Before Mitigation)

$$= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability}$$

$$= [ \text{long term (4)} + \text{local (2)} + \text{high (8)} ] \times [ \text{highly probable (4)} ]$$

$$= ( 4+2+8 ) \times 4$$

$$= 14 \times 4$$

$$= 56$$

$$= < 60 \Rightarrow \text{Moderate}$$



Calculation of impact Significance

$$\begin{aligned}
 \text{on noise (After Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\
 &= [ \text{long term (4)} + \text{local (2)} + \text{low (2)} ] \times [ \text{highly} \\
 &\quad \text{probable (4)} ] \\
 &= (4+2+2) \times 4 \\
 &= 8 \times 4 \\
 &= 32 \\
 &= < 40 \Rightarrow \text{low}
 \end{aligned}$$

**6.5.3.5 Calculation of impact significance before and after mitigation measure on odor**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The Impacts</b>	The odors of the emitted gases from the exhaust pipes of the cars and the generators The emitted caustic odors from dissolving the caustic soda with water The odors of caustic black liquor from the digester blow-down The odors from the boiler stack The odors from the kitchen
<b>Risk Assessment</b>	Nuisance and bad sensory
<b>The Sources of the Impacts</b>	Reducing the engine power; decreasing the lubricants; reducing the engine power by the dirty lubricants; using the bad quality of lubricants; and no taking the time to dissolving the caustic soda; no taking the time to blow-down the digester; no taking the time to cool down; not being right ratio of the air and the fuel
<b>The Impacted Areas</b>	The peoples along through the cars route The employees within the factory yard
<b>The Impacted Amount and Duration</b>	The impacted amount to the people is low and the impacted duration is short. The impacted amount to the employees is medium and the impacted duration is long.

<b>The Mitigation Measures for the Impacts</b>	Being ensure the engine power full; using the good quality of fuels; refilling in-time the lubricants; keeping the heat generated rate from dissolving the caustic soda; taking the time to blow-down the digester; and being the right ratio of the air and the fuel
--	---

Calculation of impact Significance

$$\begin{aligned}
 \text{on odor (Before Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\
 &= [ \text{long term (4)} + \text{local (2)} + \text{high (8)} ] \times [ \text{highly probable (4)} ] \\
 &= (4+2+8) \times 4 \\
 &= 14 \times 4 \\
 &= 56 \\
 &= < 60 \Rightarrow \text{Moderate}
 \end{aligned}$$

Calculation of impact Significance

$$\begin{aligned}
 \text{on odor (After Mitigation)} &= [ \text{Duration} + \text{Scale} + \text{Magnitude} ] \times \text{Probability} \\
 &= [ \text{long term (4)} + \text{local (2)} + \text{low (2)} ] \times [ \text{highly probable (4)} ] \\
 &= (4+2+2) \times 4 \\
 &= 8 \times 4 \\
 &= 32 \\
 &= < 40 \Rightarrow \text{low}
 \end{aligned}$$

**6.6 Guideline Limitations of National Environmental Quality (Emission) Guidelines, concerning the emitted substances from factory to environment as air, water and noise impacts**

**6.6.1 Air Emissions**

**Table 6.6 Air Quality Guidelines for the Most Common Pollutants**

Parameters	Averaging Period	Guideline Value $\mu\text{g}/\text{m}^3$
Nitrogen Dioxide	1 year	40
	1 hour	200
Ozone	8-hour daily maximum	100
Particulate Matter $\text{PM}_{10}^{\text{a}}$	1 year	20
	24 hour	50
Particulate Matter $\text{PM}_{2.5}^{\text{b}}$	1 year	10
	24 hour	25
Sulfur Dioxide	24 hour	20
	10 minutes	500

<sup>a</sup> – Particulate Matter 10 micrometers or less in diameter

<sup>b</sup> – Particulate Matter 2.5 micrometers or less in diameter

**Table 6.7 Small Combustion Facilities Emission Guidelines**

Combustion Technology/Fuel	Particulate Matter $\text{PM}_{10}^{\text{a}}$	Sulfur Dioxide	Nitrogen Oxides
Gas	-	-	200 $\text{mg}/\text{Nm}^3$ (Spark ignition) 400 $\text{mg}/\text{Nm}^3$ (Dual fuel) 1600 $\text{mg}/\text{Nm}^3$ (Compression ignition)
Liquid	100	3%	1600~1850 $\text{mg}/\text{Nm}^3$ (Higher value applies if bore size > 400mm)
Natural Gas (3 - <15MW) (Mega Watt)	-	-	90 $\text{mg}/\text{Nm}^3$ (Spark ignition) 210 $\text{mg}/\text{Nm}^3$ (Includes biomass)

Natural Gas (15 - <15MW) (Mega Watt)	-	-	50 mg/Nm <sup>3</sup>
Fuels other than natural gas (3 - < 15MW)	-	0.5% Sulfur	200 mg/Nm <sup>3</sup> (Electric generation) 310 mg/Nm <sup>3</sup> (Includes biomass)
Fuels other than natural gas (15 - < 15MW)	-	0.5% Sulfur	150 mg/Nm <sup>3</sup>
Gas	-	-	320 mg/Nm <sup>3</sup>
Liquid	150 mg/Nm <sup>3</sup>	2000 mg/Nm <sup>3</sup>	460 mg/Nm <sup>3</sup>
Solid	150 mg/Nm <sup>3</sup>	2000 mg/Nm <sup>3</sup>	650 mg/Nm <sup>3</sup>

### 6.6.2 Noise Levels

**Table 6.8 Noise Levels**

Receptor	One Hour LAeq (dBA)	
	Daytime (07:00 ~ 22:00) 10:00 ~ 22:00 for Public Holidays	Nighttime (22:00 ~ 07:00) 22:00 ~ 10:00 for Public Holidays
Residential, institutional, educational	55	45
Industrial, commercial	70	70

### 6.6.3 Effluent Levels

**Table 6.9 Effluent Levels of Pulp and Paper and/or Paper Mills**

Parameters	Unit	Guideline Value
<b>Unbleached Kraft Pulp, integrated</b>		
5-day Biochemical Oxygen Demand	kg/ADt	0.7
Chemical Oxygen Demand	kg/ADt	10
pH	S.U.	6 ~ 9
Total Nitrogen	kg/ADt	0.2
Total Phosphorous	kg/ADt	0.02
Total Suspended Solids	kg/ADt	1

**Nilar Pulp and Paper Co., Ltd (URSP Mill)** must try to reach the above air quality, combustion facility emission guideline, noise level and effluent levels of National Environmental Quality (Emission) Guidelines.

**6.7 Explanation of the Review and Suggestion by the Environmental Conservation Department upon the EMP Report Prepared December 2018**

**State the performance on the good and enough air ventilation and light intending for workplace**

- There are vacuum chamber and outdoor dust collector to catch the dust particle at the rice straw preparation section to reduce dust in atmosphere. These machines are already shown at *figure 6-1 (a), figure 6-1 (b)*.
- There are natural air canopy ventilation, opening the upper side walls and wide main door for good and enough ventilation.

Figures of air canopy ventilation, opening the side upper side wall and wide doors are shown as *figure 6-11, figure 6-12, figure 6-13*.



**Figures6-11: Air canopy ventilation**



**Figures 6-12: Opening the upper side walls**





**Figures 6-13: Wide doors**

**State the results of impact reduction after mitigation measure**

In this EMP report, initial examination of ambient air quality, workplace air quality, soil quality, surface and underground water and waste water quality are performed and mitigation measure including frequency of sampling, sampling places, analyzed and monitored budget estimation etc. Now factory is at the condition revising the EMP. The results after mitigation measure will be continued to actual data. The guesswork for reduction after mitigation measure is described at section 6-5-3 by matrix system and monitoring results shows the positive or negative result actually. It is better than the guesswork such as matrix methods.

## **7.0 RISK ASSESSMENT**

Broadly speaking, a **risk assessment** is the combination effort of:

(a) Identifying and analyzing potential (future) events that may negatively impact individuals, assets, and/or the environment and

(b) Making judgments on the Tolerability of the risk on the basis of a risk analysis while considering influencing factors.

Risk Assessment is mentioned as two categories:

7.1 Natural Disaster, assessment including climate change

7.2 Risk assessment by rice straw pulp sheet manufacturing plant

### **7.1 Natural Disaster, Assessment Including Climate Change**

Myanmar faces a number of natural disaster, including earthquake, (ground movement, Tsunami), flood, (Unspecified, flash flood, riverine flood), landslide storm (tropical cyclone), wildfire (forest fire).

Natural disasters in Myanmar from 1900 to 2014 are summarized as follow:

**Table 7.1 Summarized Table of Natural Disasters in Myanmar from 1900 to 2014**

		# of Events	Killed	Total Affected	Damage (000 US\$)
Earthquake	Ground movement	7	663	22923	4770
	Tsunami	1	71	15700	500000
Flood	Unspecified	7	161	386988	55115
	Flash flood	3	263	85734	1700
	Riverine flood	13	134	2188690	79840
Landslide	Landslide	4	125	146367	-
Storm	Tropical cyclone	17	90827	3935844	4079388
Wildfire	Forest fire	2	8	78588	11000

Source: "EM-DAT: The OFDA/CRED International Disaster Database,  
[www.em-dat.net](http://www.em-dat.net) – Universite Catholique de Louvain – Brussels – Belgium"

It is estimated that the around 870,000 people in Myanmar live in areas that are exposed to cyclone, and a similar proportion are vulnerable to earthquakes, with two fault lines running through the country across some densely populated areas. Furthermore 440,000 people are vulnerable to flooding and 390,000 are exposed to drought. These risks are being further accelerated due to processes attributed to climate change and variability. According to meteorological and hydrological data and concerning changes in pattern in recent years, such as the shortening and identification of monsoons; and increase in sea surface temperature and an overall increase in heat and drought indices; increase in clear sky days; increase in risk of flooding; increase in intensity of cyclone/strong winds/strong



waves, sea level rise are noted.

## **7.2 Risk Assessment for Rice Straw Pulp Sheet Manufacturing Plant**

The mitigation measures to reduce the impacts on the environment are described in **Chapter-6**. The risk assessment by the impact (emissions) of the production, distribution of products is discussed in this section. Therefore, the source of impact, risk assessment, the impacted areas, the impacted amount and duration and the mitigation measures for the impacts are described as the following titles:

### **7.2.1 The Sources Of The Impacts; Risk Assessment; The Impacted Areas; The Impacted Amount And Duration And The Mitigation Measures For The Impacts By The Production And Distribution Of Product**

By the production and distribution of product of this factory; the impacts to the air, water, the soil, impacts by the noise and the odor are described as follow:

- The impacts to the air
- The impacts to the water
- The impacts to the soil
- The impacts of the noise
- The impacts of the odor

#### **The Impacts to the Air**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	Spreading the dust and the particles; the emission of the combusted gases and the leakage of gases; and the emission of bad smells
<b>Risk Assessment</b>	Explosion may undergo when dust, air and spark were together in right composition. Nuisance, eye irritation, respiratory infection, probability suffer cancer.

<b>The sources of the impacts</b>	<p>The emitted particulate matters and the gases from the generator exhaust pipes and the cars for transporting the raw material, the finished products, the machines, the employees' ferry</p> <p>The leakage of the gases</p> <p>The emitted dust and the particles from the loading, transporting, chipping and screening of the rice straw</p> <p>The emitted vapors and the odors from disclosing the digester when the rice straw, the caustic soda and the steam are digested in the digester</p> <p>The generating the sulfur dioxide from using the bad quality of diesel</p> <p>The combusted vapors and odors from combusting the rice husk/saw dust fuels</p> <p>The spreading the ashes of rice husk/saw dust</p>
<b>The impacted areas</b>	<p>The peoples along through transportation route of raw rice straw, the finished goods and the machines</p> <p>The employees within the factory yard</p>
<b>The impacted amount and duration</b>	<p>The impacted amount is low to the peoples and the impacted duration is short.</p> <p>For the employees, the impacted amount is medium and the impacted duration is longer.</p>
<b>The mitigation measures for the impacts</b>	<p>In order to drive powerfully the vehicles, the machines, and the generators, the repairing the machines do systematically; the lubricants are refilled punctually; the toughness is done; and the checking the temperature, the desiccant, and the level of oil of the transformers do.</p> <p>Managing the dust and the particulate matters removing machines in the raw loading, transporting, chipping, screening sections in order to drive powerfully and supervising from the experts.</p> <p>If possible, electrostatic precipitator should be used for dust collection.</p> <p>Being powerful the machine of vapor and particles trapped when the digester is disclosed.</p> <p>Using the good quality of fuels</p> <p>Taking a time to dissolve the caustic soda and the water.</p> <p>To be complete combustion in the boiler by the right ratio of fuel and the air.</p> <p>Being powerful the cyclone particle trappers, and the water-sprayed particle trappers to catch the spread ashes of rice husk/saw dust from the boiler stack.</p> <p>Doing not to cumulate the ashes of rice husk/ saw dust.</p>

**The Impacts to the Water**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<ul style="list-style-type: none"> <li>The wastewater from the unsystematic disposal of the employees</li> <li>The accidental spills from refilling the lubricants, the transformer oils, and the battery acids</li> <li>The washed waters of the machines, tanks the rice straw and the rice straw pulp</li> <li>The boiler blow-down water</li> <li>The back-washed water and the regenerated water from the water treatment plant</li> <li>The wastewater from the employees' hostel</li> <li>The wastewater from the wastewater treatment plant</li> </ul>
<b>Risk Assessment</b>	<ul style="list-style-type: none"> <li>Due to high BOD, COD, TSS values, the ecosystem changes, pH of surrounding water and soil change light and air are prevent to transmit to under water kingdoms.</li> <li>Battery acid makes pH changes of surrounding water, Corrosion and irritation to metal, skin</li> <li>Carcinogenic</li> <li>Lubricant oil prohibit the light and air to underground water</li> <li>Transformer oil is carcinogenic</li> </ul>
<b>The sources of the impacts</b>	<ul style="list-style-type: none"> <li>Be unsystematic; not following the disciplines; breaking the instructions; and the leaking the joints of pipe lines</li> </ul>
<b>The impacted areas</b>	<ul style="list-style-type: none"> <li>Along the drain in the factory yard and the drain of industrial zone</li> </ul>
<b>The impacted amount and duration</b>	<ul style="list-style-type: none"> <li>The impacted amount to the factory's environment is medium and the impacted duration is medium long.</li> <li>The impacted amount to the employees is low and the impacted duration is short.</li> </ul>

<b>The mitigation measures for the impacts</b>	<p>Be systematic; following the instructions and disciplines; checking accurately; educating if do not follow; taking the actions; systematically keeping and selling; disposing in the specific areas of YCDC and the Industrial Zone Committee if not sell.</p> <p>Disposing the sufficient amount of boiler blow-down water</p> <p>Doing the sufficient times for back-washing and regeneration of water treatment plant.</p> <p>Doing the treatment of wastewater from the wastewater treatment plant to reach the guidelines of <i>NEQ(E)G</i> by <b>low temperature incinerator and dissolved air floatation processes.</b></p> <p>Educating and be unity not to overuse the water in the employees' hostel and the kitchen</p>
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**The Impacts to the Soil**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The solid wastes from daily used materials of the employees</p> <p>The damaged and used materials from office works, manufacturing process</p> <p>The ruined materials used in manufacturing process</p> <p>The solids from loading, transporting, chipping, screening and washing the rice straw</p> <p>The emitted ashes from the boiler stack</p> <p>The emitted ashes from the boiler combustion chamber</p> <p>The solid wastes from the employees' hostel and the kitchen</p>
<b>Risk Assessment</b>	Composition of soil, water change, Changing the flow direction of stream, river the shallow the depth of water
<b>The sources of the impacts</b>	Be unsystematic; and not following the instructions
<b>The impacted areas</b>	The peoples near the disposing place of the solid wastes and the factory's environment and the employees
<b>The impacted amount and duration</b>	The impacted amount is low and the impacted duration is short.
<b>The mitigation measures for the impacts</b>	<p>Educating to do systematically; checking; and taking actions</p> <p>Systematically keeping and selling; disposing in the specific areas of YCDC and Industrial Zone Committee</p>

**The Impacts of the Noise**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The noise and the vibration from driving the cars to transport the raw, products, the machines, and the employees and the generators</p> <p>Driving the rice straw loaded conveyors, chippers, vibrating screens, digesters, vent out the air from the digester, transfer to blow pit, the pumps, the squeezers, dryers to heat the pulp sheets, the cutters of the pulp sheets, the boiler feed water pumps, the boiler induced draft fans, and the blowers of the rice husks</p>
<b>Risk Assessment</b>	Nuisance and audio Disturbance
<b>The sources of the impacts</b>	Bad maintenance to repair the machines (e.g. the impairment of the exhaust silencers; not right aligning the machines; not doing the refilling the lubricants; not tightening the foundation bolts and nuts; not adjusting the belts) and doing hurriedness the steam blowing into the digester.
<b>The impacted areas</b>	<p>The peoples along through transportation route of raw rice straw, the finished goods and the machines</p> <p>The employees within the factory yard and near the factory's environment</p>
<b>The impacted amount and duration</b>	<p>The impacted amount to the people is low and the impacted duration is short.</p> <p>The impacted amount to the employees within the factory yard is medium and the impacted duration is long.</p> <p>The impacted amount to the employees near the factory is low and the impacted duration is long.</p>
<b>The mitigation measures for the impacts</b>	<p>Maintenance the exhaust system of the cars and the generators; maintenance of the machines; being good the refilling the lubricants and mending in-time; avoiding to work with the leisure time of the employees; giving the personal protective equipment for the employees; and no longer the duty time in the noisy place for the employee</p>

**The Impacts of the Odor**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The odors of the emitted gases from the exhaust pipes of the cars and the generators</p> <p>The emitted caustic odors from dissolving the caustic soda with water</p> <p>The odors of caustic black liquor from the digester blow-down</p> <p>The odors from the boiler stack</p> <p>The odors from the kitchen</p>
<b>Risk Assessment</b>	Nuisance and bad sensory
<b>The sources of the impacts</b>	<p>Reducing the engine power; decreasing the lubricants; reducing the engine power by the dirty lubricants; using the bad quality of lubricants; and no taking the time to dissolving the caustic soda; no taking the time to blow-down the digester; no taking the time to cool down; not being right ratio of the air and the fuel</p>
<b>The impacted areas</b>	<p>The peoples along through the cars route</p> <p>The employees within the factory yard</p>
<b>The impacted amount and duration</b>	<p>The impacted amount to the people is low and the impacted duration is short.</p> <p>The impacted amount to the employees is medium and the impacted duration is long.</p>
<b>The mitigation measures for the impacts</b>	<p>Being ensure the engine power full; using the good quality of fuels; refilling in-time the lubricants; keeping the heat generated rate from dissolving the caustic soda; taking the time to blow-down the digester; and being the right ratio of the air and the fuel</p>



## **8.0 PUBLIC CONSULTATION AND DEVELOPMENT PROGRAM**

Public consultation and development program were carried out by following five headings:

- 8.1 Consultation of factory staff and employees
- 8.2 Consultation of public and neighbors of factory
- 8.3 Informing the suggestion and opinions of factory staff, employees and public to the factory manager
- 8.4 Receiving the programs of factory to fulfil the suggestion and opinions of public consultation
- 8.5 Development program
- 8.6 Plan for CSR and budget allotment

### **8.1 Consultation of Factory Staff and Employees**

There are one hundred and thirty nine persons (including security) as staff and employees at **URSP Mill**. The staffs of Green Myanmar Environmental Services Co., Ltd. met some person of factory at meeting room on 5<sup>th</sup> February 2018 and they were urged to suggest or give opinions about the occupational health such as condition of personal protection equipment usage, drinking water, water-closet and sanitation, conditions of workplace such as noise, odor, light intensity, fire facilities, and ventilation, conditions of social relation between them, horizontal and lower level and any other comments. The 23 numbers of attended list and 22 numbers of suggestion and opinions were collected and these documents and recorded photos are mentioned as **Annex-II**. The suggestion and opinions was briefly described as follow:

- The majority except 2 persons mentioned that they are provided with the personal protection equipment, and purified drinking water.
- Most persons except 3 mentioned the water closets are enough and clean
- Most persons mentioned the sanitation system is good but 7 persons did not agree.
- 7 persons mentioned that the workplace was not noisy; and 2 persons mentioned it was tolerable, whereas 13 persons mentioned they were disturbed by loud noise
- 5 persons mentioned there was no bad odor nor vapor, but 17 persons mentioned about the bad odor
- 18 persons, except 4, were satisfied with the light intensity of workplace
- Regarding the fine particles in workplace, 11 persons recommend, 9 persons not and one person fair.
- About the ventilation of workplace, 12 persons recommend and 7 persons not.
- About the social relation, 5 persons mentioned it was inconvenient with upper level.
- Other statements are:
  - ~ To provide Occupational Safety and Health-care for each employee. (e.g. Regular medical check-up once per month)
  - ~ To support the employee with long service years



- ~ It is of utmost important to provide sufficient personal protection equipment
- ~ Medical check-up for staff once per month.

The above mentioned facts were collected and sent to the responsible person of factory. The factory personnel will carry out their suggestion.

## **8.2 Consultation of Public and Neighbors of Factory**

In order to get the suggestions and opinions of public and neighbours of factory on the production and distribution of **URSP Mill**, factory responsible person and person of **GMES** arranged the consultation meeting at No.89, Ward Administrative Office, Dagon Seikkan Township, on 1<sup>st</sup> September 2018. There were 30 persons in attendant list and 23 suggestions in that meeting. These suggestions and photographs of meeting were attached at *Annexe-III*. The details of suggestions and opinions are as follow:

- ▶ Job opportunity is more and no adverse effect on environment due to this factory construction, operation and welcome to carry on this condition
- ▶ Not become the retard the drainage flow and off-odor due to waste of factory from drain line
- ▶ Not to be off-odor of caustic soda when raw material to product process
- ▶ To be managed continuously by authorized organization in order to exactly be under laws and regulations acted by State
- ▶ Job opportunities and social economic condition be better and more convenient due to the factory existing, the drainage line is more important for waste materials and suggest to be cleaned the drain line frequently; the remaining conditions are good and there is no adverse effect by factory
- ▶ There may be blocking the drain line when factory ends operation
- ▶ There be necessary controlled in systematically about fire problem due to rice straw as raw material
- ▶ There may be some health problems to public, due to odor of smoke when factory operation, so should manage properly
- ▶ There should be noise on environment when operation, should manage properly
- ▶ There should dispose and prevent properly the dust, odor, liquid waste and fire hazard by the adverse impacts of factory
- ▶ There must find out the technologies which change the adverse effect to positive impact; bad odorous liquid to non-odorous
- ▶ There must be discussion with experts about hazardous impacts
- ▶ There must take notice the adverse effect to destroy the environment as well as good effect when do work and as much as possible not to affect the environment. Workmen take-care the dust and particulate matter at chipping place and must use facemasks. Systematic issuing for vapor and carbon dioxide should be essential.
- ▶ There should cooperated with a ward administrative person
- ▶ There should be health care person in factory

- ▶ There should be safety organization and communicate to authorized organization in time
- ▶ There should be management committee to keep off-odor from machines
- ▶ Keep noise in safely
- ▶ There should be fire brigate to prevent fire hazard
- ▶ There should be organization take-care employees to support necessary
- ▶ There should be systematic wastewater disposal
- ▶ Dispose the debris systematically
- ▶ There must be clean factory surrounding
- ▶ Take-care fire hazard in special motive
- ▶ Prevent fire hazard, adverse impact on environment and reduce wastewater
- ▶ There should not issue the dust and particulate matter mixing in the chimney
- ▶ There should be the height of chimney in highest position as possible as
- ▶ There should not dispose the wastewater containing caustic soda to stream, river and ocean
- ▶ There should install the fire hydrant to fight the fire when catch fire
- ▶ Not catch fire
- ▶ Not adverse effect on environment and air
- ▶ There should be good flow at factory surrounding
- ▶ Transfer the wastes to specified places
- ▶ There should authorized person of factory check the surrounding frequently
- ▶ There should be meeting among factory authorized person and public
- ▶ There should pray for both benefit between owner and employee and appreciate for the suggestion and discussion
- ▶ There should be necessary not to contaminant environment by rice straw, as raw material
- ▶ There should be systematic drain, not to contaminated water and off-odor when dispose wastewater
- ▶ There should takecae the fire hazard especially due to storing the rice straw in the factory
- ▶ There is very important not to pollute the air and adverse impact to the surrounding by the dust come out when the rice straw is chipped as raw material
- ▶ There is also important to be safe electrical shock and machines are kept at the isolated space not to be noise to the environment
- ▶ There is necessary to non-contaminant the rice straw fungi and if not; adverse health for employees may occur
- ▶ There is necessary to be safe for fire due to rice straw as raw material
- ▶ There is necessary to be isolated not to disturbthe surrounding when the rice straw transport
- ▶ There should be necessary to be safe and systematic condition when wastewater handle because of rice straw as raw material
- ▶ There should be safe electrical shock for staff because of machinery concerning
- ▶ There should be dispose the wastewater of factory systematically

- ▶ There should be prevent the fire hazard systematically
- ▶ There should prevent the fire hazard
- ▶ There should dispose the wastewater systematically
- ▶ There should be necessary not to come out the dust and particulate matter
- ▶ There should be necessary to take care fire hazard; not to contaminated on environment by dust, odor and not to come out polluted wastewater
- ▶ There are prevention of fire hazard, safety, good conditions of drainage, clean area a week in factory site using PPE
- ▶ There should take notice specially fire hazard due to inflammable rice straw as raw material

### **8.3 Informing the Suggestion and Opinions of Factory Staff, Employees and Public to the Factory Manager**

The suggestions, opinions of factory staff, employees and public are collected, studied, gisted and sent to the factory manager and in order to fulfil their desires. The letter of GMES team including their desires sent to factory manager in attached at *Annexe-IV*.

### **8.4 Receiving the Programs of Factory to Fulfil the Suggestion and Opinions of Public Consultation**

There was a replying letter from the factory, about informing letter stated at paragraph 8.3, attached *Annexe-V*.

### **8.5 Development Program**

The activities of **URSP Mill** as development program are:

5. Monthly birthday party for staff and employee
6. Annual Kahtain Robes is donated
7. Donation for 500,000 Kyats for Manata Group Min Tut Myot; Chin Division
8. Donation for 10,000,000 Kyats for Myanmar Pulp and Paper Association. Certificates of donations and photographs of birthday party are attached.

Estimated budget of C.S.R is planned as 2.0% of annual net profit and plan for development program is

- iv. Monthly birthday party for staff and employees
- v. Annually Kahtain Robes donation
- vi. Occasional donation for natural disaster and other emergency condition

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 MPPIA

မှတ်တမ်းတင်ရက်ပြုလွှာ

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Nilar Pulp & Paper Co., Ltd

မြန်မာနိုင်ငံပျော့ဖတ်နှင့် စက္ကူလုပ်ငန်းအသင်း သို့ အလှူငွေ ကျပ် ၁၀၀၀၀၀၀၀.၀၀

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### **8.6 Planfor CSR and Budget Allotment**

The facts mentioned at Section 8.5 should be carried on following years as CSR plan and it is intended to 2% of annual net profit as CSR budget.

## **9.0 DECOMMISSIONING PROCEDURE**

If **Nilar Pulp and Paper Co., Ltd** faces indecommission URSP Mill by the various factors, the impacts to the air, water, soil, and the impacts of the noise, the vibration and the environmental and socio-economic impacts must be managed systematically. Decommissioning procedure should be carried out by the following steps:

- 9.1 Objectives
- 9.2 Organize the decommissioning team
- 9.3 The duties and responsibilities of members
- 9.4 The source of the impacts, the impacted areas, the impacted amount and period and mitigation measures for impacts by the decommissioning
- 9.5 The estimated expenditures and schedule of the decommissioning

### **9.1 Objectives**

The objectives of decommissioning are:

- to minimize the adverse impacts on surrounding
- to maximize the positive impacts on surrounding

### **9.2 Organization of the Decommissioning Team**

The owner or factory manager nominates the name of person and duties of them for decommissioning team in order to carry out the objectives. The organization is founded by:

- ◆ team leader
- ◆ the representative of office
- ◆ The representative of electrical section
- ◆ The representative of mechanical section
- ◆ The representative of financial section
- ◆ The representative of socio-economical section

There should be based on the team mentioned at Section 10-1-1.



**9.3 The Duties and Responsibilities of Team Members**

The duties and responsibilities of the members of decommissioning are as follow:

<b>Sr. No.</b>	<b>Member</b>	<b>Duties and Responsibilities</b>
1	Team Leader	- To increase the advantages and to decrease the disadvantages, negotiating with the rest members and management are processed.
2	Office Representative	<ul style="list-style-type: none"> <li>➤ Requesting the permissions to the concerned organizations e.g. general administration department, industrial supervision and inspection department, inspection of electricity, inspection of boiler, tax department, Yangon City Development Committee</li> <li>➤ Contacting the certified contractors in the each section e.g. the certified contractors who get the occupational health and safety expertise certificates for the cutting, decommissioning, loading, unloading the buildings, tanks, pipelines, machinery, etc.</li> <li>➤ Choosing and proposing the suitable contractor from various contractors and contracting if confirm</li> <li>➤ Recording the complements of works, checking the time line in or not, sending the notices</li> <li>➤ Managing the requirements and negotiating with the rest members</li> <li>➤ Proposing, reporting, suggesting to the team leader</li> </ul>
3	Electrical Section Representative	<ul style="list-style-type: none"> <li>➤ In decommission, managing the electrical materials to be safe which materials are used while the factory e.g. In the demolished building, cut out the electricity, remove the wires which are embedded in the wall, if necessary, arranging the temporary wire lines to use the generators and description of the wire lines</li> <li>➤ Reducing the impacts by the materials with related to the electricity e.g. removing the motors, preparing not to spill the dangerous materials and the rest liquids in the motor pumps, systematically keeping the transformer oils when the transformers are removed</li> <li>➤ Managing the requirements and negotiating with the rest members</li> <li>➤ Proposing, reporting, suggesting to the team leader</li> </ul>

4	Mechanical Section Representa- tive	<ul style="list-style-type: none"> <li>➤ Negotiating with the certified contractors to maintain the emission of the dangerous materials by decommission of building to the environment</li> <li>e.g. systematically handling the ceilings involved the asbestos; systematically handling and maintaining the boiler insulators; managing not to emit the old paints contained the lead to the environment</li> <li>➤ Taking responsibility as the safety officer</li> <li>e.g. preventing the entrance to the workplace without wearing the personal protective equipment; wearing the life-safe ropes for the persons at the high places</li> <li>➤ Managing and preventing the fire risks</li> <li>e.g. preventing the fire risk by the rest vapors of diesel and petrol because of deleting the tanks of diesel and petrol</li> <li>➤ Making the temporary roads for the cars</li> <li>➤ Managing not to traffic jam</li> <li>➤ Preventing and reducing the emissions of particulate matters, odors, and vapors by the decommission</li> <li>➤ Systematically keeping the emissions of waste materials when the machines, the buildings, the building foundations, underground pipelines, the tube-well pipelines are taken off</li> <li>e.g. the concrete particles; the scales of paints; the wasted welding materials; the pieces of irons</li> <li>➤ Managing the requirements and negotiating with the rest members</li> <li>➤ Proposing, reporting, suggesting to the team leader</li> </ul>
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5	Financial Section Representa- tive	<ul style="list-style-type: none"> <li>➤ Managing to get the permission of expenditures from the owner or the representative</li> <li>➤ Making the finance lists with the contractors and checking the lists</li> <li>➤ Arranging the persons who should work in another places to do continuously</li> <li>➤ Making the compensation</li> <li>➤ Keeping the financial lists</li> <li>➤ Managing the requirements and negotiating with the rest members</li> <li>➤ Proposing, reporting, suggesting to the team leader</li> </ul>
6	Social- Economical Section Representa- tive	<ul style="list-style-type: none"> <li>➤ Making the compensation for the workers by the law</li> <li>➤ Transferring the workers in the other related enterprises</li> </ul>

#### **9.4 Source of Impacts, Impacted Areas, Impacted Amount, Period and Mitigation Measures for Decommissioning Phases**

By the decommission process of this factory, the impacts to the environment, the impacted areas, the impacted time and the mitigation measures of the impacts are described as follow:

- 9.4.1 The impacts to the air by the decommission process
- 9.4.2 The impacts to the water by the decommission process
- 9.4.3 The impacts to the soil by the decommission process
- 9.4.4 The impacts of the noise by the decommission process
- 9.4.5 The impacts to the socio-economical section by the decommission process

**9.4.1 The Impacts to the Air by the Decommission Process**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	Spreading the dust and the particles; the emission of the combusted gases and the leakage of gases; and the emission of bad smells
<b>The sources of the impacts</b>	<p>The materials generated from decommission by the employees; the fuels; the cars to transport the machines; the emission of the particles, the gases and the bad smells from the exhaust pipes of the temporary generators</p> <p>The emission of the vapors and the odors by the vaporization of transporting the rest diesel, petrol to the environment</p> <p>The evaporation of transformer oils if the transformer is removed</p> <p>If the raw rice straw remains, removing them; the emission of particles if the particles of rice straw trapped instrument; and the loaded rice straw conveyors</p> <p>The particles, the vapors, and the odors by demolition the building walls, digging the foundations and cutting the iron tanks are emitted to the air (e.g. the combusted vapor of paint, the iron particles)</p> <p>Dusts by passing the cars</p> <p>The particles of glass wool from removing the boiler insulators</p> <p>The emitted particles by transporting the rest rice husk/saw dust to the environment</p> <p>The particles from the demolition of car balance</p> <p>The emitted vapors and the odors from cooking of the employees at workplace</p>
<b>The impacted areas</b>	<p>Along through the transportation routes of the old materials</p> <p>The employees of decommission and the employees near the factory</p>
<b>The impacted amount and period</b>	<p>The impacted amount to the people is low and the impacted period is short.</p> <p>The impacted amount to the employees at workplace is high and the impacted period is no longer.</p> <p>The impacted amount to the employees near the factory is low and the impacted period is short.</p>

<b>The mitigation measures for the impacts</b>	<p>Increasing the engine power of the cars and the generators; using the good quality fuels; reducing the emission of non-natural gases and the carbon particles</p> <p>Checking not to spill when the rest diesel, petrol are transported; transporting them with the tanks contained lids; Doing this transportation in the low temperature time</p> <p>Doing the cleaning the particles when the rest rice straw, the conveyors, the chipping machines, and the vibrating screens are transported</p> <p>Sprinkling the water when the buildings and the foundations are dug</p> <p>Reducing the cutting places of the steel tanks</p> <p>Removing the paints on the cut line</p> <p>Removing and handling the boiler insulators (glass wools) by the certified persons only</p> <p>Transporting the rest rice husk/saw dust with the safe bags</p> <p>Sprinkling the water when the weighing bridge is moved and doing this in the low temperature time</p> <p>Ordering the meals for the employees at workplace</p>
--	--

#### 9.4.2 The Impacts to the Water by the Decommission Process

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>Not systematically disposing the wastewater of the employees at workplace</p> <p>The washed waters of the washing the tanks of diesel, petrol not to explode when these tanks are transported, and cut</p> <p>The spilled water of transporting the lubricants, and the transformer oil</p> <p>The rest washed water from the caustic soda tanks, the digesters, and the washing tanks of the pulps</p> <p>The remained waters from the boiler</p> <p>The rest lubricants from the pumps and the gear boxes</p> <p>The remained liquids from the septic tanks</p> <p>The sprinkled liquids not to dust in the roads when the decommission is done</p> <p>The generated wastewater from cooking of the employees at workplace</p>
<b>The sources of the impacts</b>	Not to be systematic; not following the rules; and breaking the instructions
<b>The impacted areas</b>	The drain of the wastewater generated in the factory and along the industrial zone drain

<b>The mitigation measures for the impacts</b>	<p>Being systematic; following the rules, the instructions; checking; educating if not follow; and taking actions</p> <p>Disposing the wastewater by collecting in the specific areas of YCDC and the industrial zone committee</p> <p>Removing the remained liquid from the septic tanks by the management of the YCDC</p>
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#### **9.4.3 The Impacts to the Soil by the Decommission Process**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The emitted solid wastes from daily using of the employees at workplace</p> <p>The emitted solid wastes from cooking of the employees at workplace</p> <p>The rest rice straw, saw dust and the rice husk</p> <p>The undersized rice straws and the stuck rice straw and pieces of binding wires at the fans</p> <p>The spilled solid wastes from decommission of the building (e.g. the brickbat; the pieces of the concrete; the sand; the broken glass; the pieces of the ceiling)</p> <p>The combusted ashes of the paint and the pieces of the iron sticks from the decommission of the tanks</p> <p>The pieces of the boiler insulator</p> <p>The pieces of the cuts and the ruined bolts and nuts</p> <p>The ruined wires and the switches</p> <p>The brickbats and the pieces of steel sticks from removing the weighing bridge</p> <p>The iron scales and the ruined joints from removing the embedded water pipe lines</p>
<b>The sources of the impacts</b>	Not to be systematic; not following the rules; and breaking the instructions
<b>The impacted areas</b>	The environment of the factory and the peoples along through the routes of transportation of the ruined materials and the employees at workplace
<b>The impacted amount and period</b>	<p>The impacted amount to the peoples along through the routes of transportation of the ruined materials is low and the impacted period is short.</p> <p>The impacted amount to the employees at workplace is medium and the impacted period is no longer.</p>
<b>The mitigation measures for the impacts</b>	<p>Educating to do systematically; checking; and taking actions</p> <p>Instructing not to spill the ruined materials when the transporting, and loading to the cars are done; transporting with the shelter; and using the expert drivers and the tough cars</p>

#### **9.4.4 The Impacts Of the Noise By the Decommission Process**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	<p>The noise and the vibration by driving the machines, the transportation cars and the generators and by the ruined materials and the employees at workplace</p> <p>When the buildings are demolished, the noise and the vibration by hitting, drilling, and decommission</p> <p>The noise and the vibration by digging the foundation</p> <p>The noise and the vibration by removing the boiler and removing the insulators</p> <p>The noise and the vibration by driving the electrical machines</p> <p>The noise and the vibration by removing the weighing bridge</p> <p>The noise and the vibration by removing the steel tanks and the machines</p>
<b>The sources of the impacts</b>	Not to be systematic; not following the rules; and breaking the instructions
<b>The impacted areas</b>	The peoples along through the routes of transportation of the ruined materials and the employees at workplace
<b>The impacted amount and period</b>	<p>The impacted amount to the peoples along through the routes of transportation of the ruined materials is low and the impacted period is short.</p> <p>The impacted amount to the employees at workplace is medium and the impacted period is no longer.</p>
<b>The mitigation measures for the impacts</b>	<p>Doing systematically; using the personal protection equipment to the employees at workplace</p> <p>Mitigating by short-term procedures if the noise value is exceeded to the standards</p> <p>Doing the works by avoiding to the leisure time</p>

#### **9.4.5 The Impacts to the Socio-Economical Section by the Decommission Process**

<b>Nilar Pulp and Paper Co., Ltd (URSP Mill)</b>	
<b>The impacts</b>	The employees are unemployed The related enterprises are unemployed e.g. piece-work of loading and unloading; the traders; and the persons who carry the rice husk/saw dust Decreasing the tax income to the country Transportation enterprises of the raw materials and finished goods e.g. the rice straw; loading the pulp sheets; the rice straw supporters from Thanlyin, Thone Gwa Township Getting the some income to the employees at workplace Getting the some income to the persons who trades the brickbats By the decommission proces
<b>The sources of the impacts</b>	By the nature of decommission
<b>The impacted areas</b>	The factory's employees The employees at workplace
<b>The impacted amount and period</b>	The impacted amount to the factory's employees is medium and the impacted period is medium. The impacted amount to the employees at workplace is short and the impacted period is short.
<b>The mitigation measures for the impacts</b>	Giving the compensation to the factory's employees Transferring to another factories if suitable

#### **9.5 The Estimated Expenditures and schedule of the Decommissioning**

<b>Sr. No.</b>	<b>Process Names</b>	<b>Expenditures</b>	<b>Remark</b>
1.	Transporting, and selling the rest raw materials ( the rice straw, the caustic soda, the rice husk/saw dust, the lubricants, the diesel, the petrol)	2,000,000 MMK	
2.	Removing the electrical machines; transporting and using the generators	2,000,000 MMK	



**Environmental Management Plan-EMP****Unbleached Rice Straw Pulp Mill (URSP Mill)****Nilar Pulp and Paper Co., Ltd.**

3.	Demolishing the buildings; selling The buildings are the security gate, the boiler building, the main building, the two buildings of generators, the electricity control panel building, the water treatment building, the dining room of the employees, the two store buildings, the hostel for the employees, and the wastewater treatment building.	8,850,000 MMK	
4.	Removing the machines (the conveyors, the chippers, the vibrating screens, the two digesters, the three tanks of caustic soda, the two vapor catchers, the particle trappers, the cleaners of the pulps, the level tank, the two vats, the pressure drums, the cutters of the pulps, the cores of the pulps)	7,500,000 MMK	
5.	Digging the water pipelines, the tube wells, the tube well pipelines from the soil and removing the water treatment equipment	2,500,000 MMK	
6.	Transporting the weighing bridge	1,000,000 MMK	
7.	Transporting the boilers	1,000,000 MMK	
8.	Removing the septic tanks by the management of the YCDC	500,000 MMK	
9.	Digging the foundations, the transporting and selling the brickbats	1,000,000 MMK	
10.	Refilling with the earth to the foundation cavity	500,000 MMK	
11.	Growing the plants if not transfer to another owner	1,000,000 MMK	
12.	Compensating to the employees for three months (average payment 300,000 MMK × 100 nos. of employees) $3 \times 3 \times 100 = 90,000,000$ MMK	90,000,000 MMK	
<b>Total</b>		117,850,000 MMK	



**Environmental Management Plan-EMP**  
**Unbleached Rice Straw Pulp Mill (URSP Mill)**

**Nilar Pulp and Paper Co., Ltd.**

**The Decommissioning schedule for Nilar Pulp and Paper Co., Ltd. (URSP-Mill)**

SR. No.	Procedure	Weeks																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	Organizing the decommissioning team and assaigning the duties and responsibilities																	
2.	Transpotation the raw materials (left as rice straw, rice husk, saw dust, caustic soda, binding wrie etc.)																	
3.	Removing the office documents, the materials from laboratory, hostile kitchen																	
4.	Contracting the contractors																	
5.	Manage the electrical safety for further procedure																	
6.	Removing the transformer, electrical lines, electrical mechinery																	
7.	Dismantleting the machines, pipe lines and removing																	
8.	Demolition the buildings and removing (security gate, boiler and main building, 2 building for generator and control, water treatment building, dinning room, and wastewater treatment building																	
9.	Removing the water distribution system and storage tank, pipe lines and underground pipe																	
10.	Transpotation of weighing bridge																	
11.	Transpotation of boiler																	
12.	Disposal of septic tank, sewage																	
13.	Digging the foundation and removing																	
14.	Refiling the earth to																	
15.	Growing the plants																	



## **10.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

Environmental and Social management plan is described as two categories, following

10.1 Scheme of Organization to Implement the Environmental and Social Management Plan

10.2 Commitment by Nilar Pulp and Paper Mill (URSP Mill)

### **10.1 Scheme of Organization to Implement the Environmental and Social Management Plan**

Schemes of organization to implement the environmental and social management plan are following:

10.1.1 Set up the organization of environmental and social management plan

10.1.2 Duties and responsibilities

10.1.3 Monitoring and reporting

10.1.4 Possible environmental and social impact in brief

10.1.5 Mitigation measures of current impacts

10.1.6 Mitigation measures of impacts in future

10.1.7 Scheme of response, preparation, training when the factory faces in emergency condition

10.1.8 Parameters, procedures, time schedule, specified place, frequency and approved methods for environmental quality monitoring

- Monitoring the environment air

- Monitoring the environment water

- Monitoring the environment soil

- Monitoring the noise on environment and employee

10.1.9 Public participation and development

10.1.10 Skill development and training schedule

10.1.11 Person and organization implement the environmental and social management plan; estimated expenditure

10.1.12 Setting up the organizations

10.1.13 Scheme performed by environment and social management committee

10.1.14 Budget estimation for environment social monitoring, safe and health care, and reducing carbon

### 10.1.1 Set up The Organization of Environmental and Social Management Plan

Nilar Pulp and Paper Co., Ltd (URSP Mill) owner or factory manager nominates the suitable person as leader of environmental and social management organization and set it up including representative person of various departments as following:

- ✓ leader of environmental social management organization
- ✓ representative person of production department
- ✓ representative person of administration department
- ✓ representative person of finance department

Table 10.1 Organization of Environmental Social Management Plan

SR. No.	Name	Designation	Service Life	Education	Duties	Remark
1.	U Tin Aung Moe	Factory Manager	12	Basic High school	Manager	
2.	U Zaw Latt	Production Head	10	B.Sc (Chemistry)	Production	
3.	U Zaw Htwe Naung	HR Head	7	B.A (Myanmar)	Office	
4.	Daw Soe Soe Paing	Finance Head	1	B.A (Economic)	Finance	

### 10.1.2 Duties and Responsibilities

The following duties and responsibilities concern the member of organization.

Duties and responsibilities of leader

Duties and responsibilities of production department representative

Duties and responsibilities of administration department representative

Duties and responsibilities of finance department representative

#### Duties and Responsibilities of Leader

- Studying the environmental, social management plan and perform the budget allotment by owner or factory manager for monitoring and mitigation measures subjected in environmental and social management plan.
- Preparing the monitoring and mitigation measures to respective department

- If environmental conservation department instructs to submit new revised EMP, connect the third party and make the revised report.
- Make the other members specified duties.
- Report the performance of organization to owner or factory manager

**Duties and Responsibilities of Production Department Representative**

- Make current impact mitigation
- Discuss and compromise with other members
- Report the performance to leader
- Check and prepare the perpetual events, e.g., leakage, spillage, fire-extinguisher, etc.

**Duties and Responsibilities of Administration Department Representative**

- Perform the ledger, entry, consume, and balance, e.g., waste material, reuse, recycle, reliable etc.
- Connecting the development committee for some waste not suitable by factory dispose, destroy
- If necessary manage and make discipline.

**Duties and Responsibilities of Finance Department Representative**

- Arrange the smooth expenditure of members
- Budgetary control
- If necessary manage and make discipline

**10.1.3 Monitoring and Reporting**

Monitoring and reporting procedures by the said factory are following –

- Workplace monitoring
- Incident, accident and emergency reporting
- Measuring the performance with indices, interpreting and acting by indices

**Workplace Monitoring**

The workplace monitoring and inspection program of **Nilar Pulp and Paper Co., Ltd (URSP Mill)** are performed by the following table.

<b>Nilar Pulp and Paper Co., Ltd. (URSP Mill)</b>			
<b>The facts of workplace</b>	<b>Parameters that should be measured</b>	<b>Check points</b>	<b>Measurement frequencies</b>
The air quality at workplace	The emitted vapors Nitrogen Dioxide, Ozone, Particulate Matter PM <sub>10</sub> , PM <sub>2.5</sub> , Sulfur Dioxide	The place of rice straw stored The place of the rice straw digesting The place of caustic soda storing The place of filling the rice straw to the digester The place of pulp sheets drying The place of finished goods storing The boiler room	Twice a year
The wastewater quality at workplace	<b>Pulp and paper Mill (Unbleached Kraft Pulp, Integrated)</b> 5-day Biochemical Oxygen Demand Chemical Oxygen Demand pH Total Nitrogen Total Phosphorous Total Suspended Solids	The drain from the factory outlet The straw wash water The wastewater from the thickener	Once a month

The health, the safety and the prevention of fire risks	Using the personal protection equipment, e.g. rubber gloves, cloth gloves, goggles, the chest cover, the knee cover, the safety boots, the tester, the signboards of warning the danger, the first aid kit, writing the accident report, medical checkup data, the medical checkup records, the fire extinguishers, the instructions for emergency contacts	The all places that may be occurred	Always
The noise	The level of noise (dBA)	The place of rice straw stored The place of the rice straw digesting The place of caustic soda storing The place of filling the rice straw to the digester The place of pulp sheets drying The place of finished goods storing The boiler room	Twice a year

### **Incident, Accident and Emergency Reporting**

**URSP Mill** is a factory that produces the pulp sheet by using the rice straw as main raw material, caustic soda as secondary raw material and rice husks, diesel, petrol, lubricant, hydraulic oil, common salt, etc. as supporting raw materials. At that factory, rice straw was precleaned, chipped, washed and digested with steam and caustic soda in digester. After digesting, rice straw fiber was separated from black liquor and was cleaned and separated other impurities such as uncooked fiber, sand and unsuitable fiber by step by step operation. The well-digested fiber was dewatered between belts, press by steam heated roller and became pulp sheet.

During the above operation and distribution of finished goods, incident and accident may occur. If there were systematic recording, and reporting is kept systematically, there will be little chance to happen again in future. Therefore, report forms for extraordinary event and accident were attached.



**Nilar Pulp and Paper Co., Ltd (URSP Mill)**  
**No.59, U Shwe Bin Street, Industrial Zone (1),**  
**Dagon Seikkan Township, Yangon Region, Myanmar**

To

IN CHARGE

----- Department

Dagon Seikkan Township

Yangon Region

Date: -----

**Subject:      Reporting the extraordinary events**

Concerning above, there were extraordinary events at **Nilar Pulp and Paper Co., Ltd (URSP Mill)** and report it in order to be necessary instructions.

1. Fire Alert / Catch Fire

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2. Accident Occurrence

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-----

3. Riot by Employee

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-----

4. Natural Disaster Occurrence

-----  
-----

5. Riot by People

-----  
-----

6. Communicable diseases

-----  
-----

7. Food Poisoning

-----  
-----

8. Traffic Accident

-----  
-----



9. Others

-----  
-----

Factory Manager

**Nilar Pulp and Paper Co., Ltd (URSP Mill)**  
**No.59, U Shwe Bin Street, Industrial Zone (1),**  
**Dagon Seikkan Township, Yangon Region,**  
**Myanmar**



**No.59, U Shwe Bin Street, Industrial Zone (1),  
Dagon Seikkan Township, Yangon Region, Myanmar**

**(ACCIDENT REPORT FORM)**

No. -----

Name of Person involved in accident -----

Address -----; Ph. No. -----

Date of occurrence -----; Time of occurrence -----

Where and to whom was the accident initially reported -----  
-----

Witness Ph. No. and Address -----  
-----

Summary of specific details of occurrence (include date and time) [Use additional pages and photos if necessary] -----  
-----  
-----

Details of injury/damage: (indicate type of injury – put 'x' in one box only):

- |  |   |
|--|---|
| <input type="checkbox"/> Bruising, contusion               | <input type="checkbox"/> Suffocation, asphyxiation      |
| <input type="checkbox"/> Concussion                        | <input type="checkbox"/> Gassing                        |
| <input type="checkbox"/> Internal injuries                 | <input type="checkbox"/> Drowning                       |
| <input type="checkbox"/> Open wound                        | <input type="checkbox"/> Poisoning                      |
| <input type="checkbox"/> Abrasion, graze                   | <input type="checkbox"/> Infection                      |
| <input type="checkbox"/> Amputation                        | <input type="checkbox"/> Burns, Scalds and frostbite    |
| <input type="checkbox"/> Open fracture (i.e. bone exposed) | <input type="checkbox"/> Effects of radiation           |
| <input type="checkbox"/> Closed fracture                   | <input type="checkbox"/> Electrical injury              |
| <input type="checkbox"/> Dislocation                       | <input type="checkbox"/> Property damage, Specify ----- |
| <input type="checkbox"/> Sprain, torn ligaments            | <input type="checkbox"/> Other, Specify -----           |

Indicate part of body most seriously injured (put 'x' in one box only):

- |   |   |
|---|---|
| <input type="checkbox"/> Head, except eyes          | <input type="checkbox"/> Fingers, one or more         |
| <input type="checkbox"/> Eyes                       | <input type="checkbox"/> Hip joint, thigh, knee cap   |
| <input type="checkbox"/> Neck                       | <input type="checkbox"/> Knee joint, lower leg, ankle |
| <input type="checkbox"/> Back, spine                | <input type="checkbox"/> Foot                         |
| <input type="checkbox"/> Chest                      | <input type="checkbox"/> Toes, one or more            |
| <input type="checkbox"/> Abdomen                    | <input type="checkbox"/> Extensive parts of the body  |
| <input type="checkbox"/> Shoulder, upper arm, elbow | <input type="checkbox"/> Multiple injuries            |
| <input type="checkbox"/> Lower arm, wrist, hand     | <input type="checkbox"/> Other, Specify -----         |



Consequences of the Accident/Incident:

Fatal	<input type="checkbox"/> Date of resumption of work	Anticipated absence if not
	<input type="checkbox"/> if back	<input type="checkbox"/> back
Non Fatal	Year    Month    Day	<input type="checkbox"/> 4-7 days
	-----	<input type="checkbox"/> 8-14 days
		<input type="checkbox"/> More than 14 days

Treatment: -----

Doctor's report and recommendation: -----

Steps taken to prevent reoccurrence of this type of Accident/Incident: -----

Signature of person completing report: ----- Date: -----

Print Name and Job Title: -----

Signature of Head of Department: ----- Date: -----

Print Name: -----

Factory Manager

**Nilar Pulp and Paper Co., Ltd (URSP Mill)**  
**No.59, U Shwe Bin Street, Industrial Zone (1),**  
**Dagon Seikkan Township, Yangon Region,**  
**Myanmar**



**Measuring the Performance with Indices, Interpreting and Acting by Indices**

At the said factory, accidents are recorded and calculated the **Accident Indices** and concluded that, factory directed to good or adverse condition by analyzing the indices. The calculating method of accident indices was as follow:

**Nilar Pulp and Paper Co., Ltd (URSP Mill)**

**No.59, U Shwe Bin Street, Industrial Zone (1),**

**Dagon Seikkan Township, Yangon Region, Myanmar**

**(Calculation the Accident Indices)**

Frequency rate and Severity rate are measured as accident indices. In order to calculation, the attendance of employees, working hour, no. of employees were filled up as following:

**Facts from accident occurrence and attendance records**

Sr. No.	Fiscal Year	Accident Severe		Accident		Man-hour loss by official accident	Total man-hour loss	Average worked person a day	No. of accident in year
		Death	Alive	Official	Non-official				

From above table,

$$\text{Frequency rate} = \frac{\text{no of accident occur in one year} \times 10^6}{(\text{man-hour in one year})}$$

$$\text{Severity rate} = \frac{\text{loss man-hour in one year} \times 10^6}{(\text{man-hour in one year})}$$



**10.1.4 Possible Environmental and Social Impact In Brief**

Due to production and distribution of pulp sheet by **URSP Mill**, the environmental and social impacts were identified as follow in brief:

<b>Sr. No.</b>	<b>Impact Surrounding</b>	<b>Adverse Effects</b>	<b>Remark</b>
1.	Ambient and workplace air	<ul style="list-style-type: none"> <li>- Dust and Particulate Matter emission</li> <li>- Combustion gases</li> <li>- Gas leakage</li> <li>- Off odor</li> <li>- May explode when dust (Particulate Matter), air and spark together.</li> <li>- Particulate Matters cause respiratory diseases.</li> <li>- Normal combustion gas CO<sub>2</sub> makes global warming</li> <li>- Extraordinary condition gas CO and SO<sub>2</sub> are poisonous gases.</li> <li>- Carbon particle cause respiratory disease</li> <li>- Transformer oil may be carcinogenic</li> <li>- HFC, from air conditioning and refrigerator destroy ozone layer</li> <li>- Off odor of caustic soda make irritate</li> </ul>	
2.	Surrounding water	<ul style="list-style-type: none"> <li>- High concentration of impurity by R.O reject water, boiler blowdown water</li> <li>- Common salt solution for resin regeneration</li> <li>- Spillage of lubricant, battery acid</li> <li>- High BOD, COD, TSS in wastewater such as straw wash, fiber wash water, etc</li> <li>- Common salt solution cause metal corrosion</li> <li>- Battery acid causes skin and metal corrosion, change pH of water</li> <li>- Lubricant prevents the light and air to penetrate the water</li> <li>- high BOD, COD, TSS change ecosystem</li> </ul>	

**Environmental Management Plan-EMP****Unbleached Rice Straw Pulp Mill (URSP Mill)****Nilar Pulp and Paper Co., Ltd.**

3.	Surrounding Soil	<ul style="list-style-type: none"><li>- Non-degradable plastic causes soil proportion change</li><li>- ash of rice husk or saw dust make changing the water flow direction, shallow coast, change soil proportion</li><li>- Battery acid change pH of soil</li><li>- Lubricant prevent the penetration of air to soil</li></ul>	
4.	Employee	<ul style="list-style-type: none"><li>- Hot burn by steam</li><li>- respiratory diseases</li><li>- unpleasant effects by noise</li></ul>	
5.	Social Environment	Ecosystem change	



**10.1.5 Mitigation Measures of Current Impacts**

Mitigation measures of current impacts by production and distribution of pulp sheet by **URSP Mill** are performed as following table including expected expenditure.

Sr. No.	Impact Region	Mitigation Measure	Expenditure
1.	Air	Increase efficiency of vehicle and generator set, using qualified fuel, check and renew lubricant oil, good maintenance 100,000 × 12	1,200,000
		Reducing the dust and particulate matter emissions by loading /unloading straw, chipping, screening (exhaust system and fine particle are removed immediately) 50,000 × 12	600,000
		Vent vapor control system of digester (proper maintenance and replace the worn out parts e.g., valve, gasket, leakage) 50,000 × 12	600,000
		Leakage of transformer oil, refrigerant (check and maintenance transformer oil, breather, level, safeguard, operation under S.O.P) 50,000 × 12	600,000
		Reducing caustic soda vapor when dissolving (take enough time, wearing personal protective equipment) 20,000 × 12	240,000
		Prevent spillage of rice husk, saw dust and their ashes by using good bag, eliminate ashes urgently 50,000 × 12	600,000
2.	Water	Collect systematically used engine oil, lubricant, battery acid, and sold out or disposed under guidance of industrial zone committee and Yangon City Development Committee 30,000 × 12	360,000
		Collect the samples of wastewater (straw wash, from thickener, factory outlet and drainage outside factory, tube well water ) and send to laboratory 10,000 × 12 (transport only)	120,000



3.	Soil	Collect systematically and store the packing material such as plastic bag for caustic soda, lubricant, engine oil, and sold out or disposed by guidance of industrial zone and Y.C.D.C 10,000 × 12	120,000
4.	Employee	Personal protective equipment Glove, earplug, boot, apron, goggles, etc 20,000 × 12 First aid box, medicine for general 20,000 × 12	240,000  240,000
<b>Total</b>			<b>4,920,000</b>

### 10.1.6 Mitigation Measures of Impacts In Future

At **URSP Mill**, mitigation measures of impact in future were carried out by the financial condition of company and government aid available. It was summarized as following table.

Sr. No.	Impact Area	Mitigation Measure	Benefit
1.	Air	Change the fuel system by liquid or gas fuel instead of solid fuel (rice husk and saw dust) in boiler	Reduce carbon monoxide, sulfur dioxide, ash and particulate matter
2.	Soil	Change the fuel system by liquid or gas fuel instead of solid fuel (rice husk and saw dust) in boiler	Impact by ash was eliminated
3.	Underground Water	Separate out the straw wash water treated and reused	Save water consumption
4.	Water	Research and develop in lignin utilization	Valuable product and waste volume become less.
5.	Employee	Using sound proof generator set	Avoid the noise environment
6.	Social	Resident of employee are planned at near factory	Reduced traffic Jam.

### 10.1.7 Scheme of Response, Preparation, Training When the Factory Faces In Emergency Condition

**URSP Mill** may face emergency condition due to nature, human and environment. At that time, life of human, properties of factory, productive resources such as raw, semi-product, finished product, machineries, etc., must be managed to the least loss and reformed the original in short time. Therefore, emergency plan must be compiled and followed up. The emergency plan for said factory and training program was as follow:

**Nilar Pulp and Paper Co., Ltd (URSP Mill)**  
**No.59, U Shwe Bin Street, Industrial Zone (1),**  
**Dagon Seikkan Township, Yangon Region, Myanmar**  
**Emergency Plan**

## **1.0 INTRODUCTION**

There should align the emergency plan that already composed for making the life and investment of human less loses when face the emergency conditions while produce the products by using human resources, machineries, raw materials and investment.

## **2.0 OBJECTIVE**

**URSP Mill** aims that causes less loses the lives of employee, productive activities when faces the emergency conditions by following the emergency plan already written.

## **3.0 EMERGENCY CONDITIONS**

There are many emergency conditions face the human. Among them, the following three conditions are chosen and planned. If there should be other emergency conditions, it can solve by referring these conditions.

- 3.1 Catch Fire
- 3.2 Natural Disaster
- 3.3 Health Emergency for Employee

### **3.1 CATCH FIRE**

The two following sections will be stated about catch fire.

- 3.1.1 Possible Ways
- 3.1.2 Prevention, Fire Fighting and Managing for Less Losses

#### **3.1.1 POSSIBLE WAYS**

There are two possible ways for catch fire about **URSP Mill**. They are –



Catch Fire by Own Site

Catch Fire by Other Sites

### **CATCH FIRE BY OWN SITE**

There may be caught fire by the following causes:

**i. Due to Raw Materials, Product and Packing Materials**

In **URSP Mill**, rice straw, rice husk/saw dust as raw materials; pulp sheet as finished goods, empty plastic bags as packing materials for caustic soda, common salt, rice husk/saw dust are easily caught fire. When straw, rice husk/saw dust be some moisture, heat evolved by bacteria propagation and catch fire automatically.

**ii. Due to Diesel, Petrol used in factory**

Diesel, petrol are used for running of motor vehicles, electric generator set, wheel loader, forklift, etc. They are inflammable fluid.

**iii. Due to Motor Vehicles, Generator Set, Wheel Loader, Forklift, etc.**

Catching fire by battery shock, petrol, diesel spillage onto the hot metal surface such as exhaust pipe, while vehicle, gen-set in running.

**iv. Due to Electrical Wire Shock**

At the said factory, the heavy loaded machineries such as chain conveyor, chipper, vibrating screen, digester rotation system, drum roller run and electricity consumption in high. If the electricity load and ability of wires, switches, and contactors are not matched, it may electric shock and catches fire.

**v. Due to Dust Particle Explosion**

During the rice straw are prepared such as loading, unloading, conveying, chipping, screening, some dust particles dispersed in atmosphere and there may be explosion at the right ratio of dust and air when spark or flame exist near.

**vi. Due to Thundering**

**URSP Mill** exists at industrial zone and chimney height of factory is higher than surrounding factory building. So possibility of

thundering may be.

**vii. Due to Electric Appliance used by Employee**

At the said factory employee use electric appliance such as hot plate, oven, heater, fan, air condition, phone charger, etc. at laboratory, office, workshop and store. If they forget to switch off when they left, some electric shock may make catch fire.

**viii. Due to Boiler Explosion**

At **URSP Mill**, steam is utilized at digesting, pulp sheet drying and it is produced at boiler. During the boiler operation, low level of boiler water, scale formed at boiler tube, malfunction of pressure gauge may make boiler explosion and catch fire.

**CATCH FIRE BY OTHER SITES**

The said factory is surrounded by two garages, one saw mill and one concrete batching plant and they are separated by fences and there are enough distances to prevent not to easily catch fire. The possible ways by other are due to the piece-rate workers and vehicles come from others, by careless manner on fire.

**3.1.2 PREVENTION, FIRE FIGHTING AND MANAGING FOR LESS LOSSES**

**PREPARATION FOR PREVENTION**

Prevention is the best way for not catch fire. The following prevention procedures are conducted by **URSP Mill**.

- Planning the quality of auto catch fire materials such as rice straw, rice husk, saw dust, plastic bags are in minimum requirement at factory
- Make good ventilation and replace up and down not to accumulate heat
- Use first in first out
- Check the spillage and leakage of petroleum product always
- Prevent these material not to spread out by weir
- Arrange to use easily the suitable fire extinguishers
- Train the employee how to use fire extinguishers



- Check the wire contact, battery, starter, etc. of the vehicles and generator set to electrical shock
- Check and repair the electrical load and ability of switches, wire, contactors, fuses
- Arrange the dust particles in less and good ventilation , not to the spark and flame
- Check the lightning arrestor and earth condition by expert person
- Organize, educate and penalty the employee, used electrical appliance
- Operated the boiler by standard operation procedure
- Warning the piece-rate workers by signboard, instructions

### **FIRE FIGHTING**

The best thing for the factory is prevention not to catch fire, but if happen there should manage the firefighting successfully in short time and being less losses condition. To get these benefits, there should be trained the employee, how they fight the fire with existing fire extinguishers, i.e. which extinguisher suit for what kind of fire (e.g., oil, petroleum, normal, electricity). They are also trained how to connect the nearest fire brigade in short time and transport the important document, old person and productive activities to save place.

### **MANAGEMENT TO LESS LOSS**

The following groups are united when the firefighting group in working in catch firing.

#### **a. Group to Shut Down the Electricity and Arrange the Emergency Lighting**

When factory catch fire, electricity should be shut down depending on the place of catch fire and arrange to switch on emergency light. This procedure was trained and rehearsal in previous fire drill.

#### **b. Group to Prohibit the Horde**

While the factory catches fire, the firefighting engines and water boxers should be allowed to enter under control as well as prohibit

the horde may be together. Moreover, other entrances, passing across the fences should be guarded and prohibited.

**c. Group Make the Employee Safe**

While the factory catches fire, the old and female employees should be safe by shifting in safe place. During the shifting procedure, there should carry out as the drill such as choosing assembly area by rehearsing.

**d. Group Make the Important Document Safe**

While the factory catches fire, important documents, previous properties should be safe by shifting by priority order. It was planned at drill by rehearsing.

### **3.2 NATURAL DISASTER**

Natural gifts for human are good as well as bad things sometimes. Natural disaster is following in brief:

1. Flooding
2. Storm
3. Wildfire
4. Earthquake
5. Thundering
6. Heat wave
7. Cold wave
8. Tsunami
9. Landslide

If one of the above natural disasters faces the factory, there should manage to less losses such as lives of human and productive activities by conducting the weather forecasting from radio, television, and other possible ways of information and managing same as catch fire emergency plan groups.

### **3.3 HEALTH EMERGENCY FOR EMPLOYEE**

The possible ways of health emergency cases for employee are as following:

- (a) Accidents in factory and on duty at out of factory



- (b) Health attack, unconscious, epilepsy in suddenly
- (c) Food poisoning

When the above conditions become, there should arrange to treat in first aid, to carry to the nearest hospital with readiness of expenditures, vehicles and drivers.

#### **4.0 COMMUNICATION WITH OTHER SOCIETIES WHEN FACING EMERGENCY CONDITION**

a. Pyidaungsu Hluttaw acted Pyidaungsu Hluttaw Law No.21, at July 31, 2013 as **Natural Disaster Management Law**. In this law, **Natural Disaster** means the destructions to the life and property, livelihood, infrastructures, safety education and health of public or to the environment due to natural or man-made accidents on negligence such as fire, landslides, storms, floods, thunderbolts, droughts, earthquakes, tsunamis, avalanches, heat or cold waves, volcanic eruptions, erosion of banks and shores and maritime accidents, or damage to crops caused by pests or plant diseases, starvation and outbreak of contagious diseases of human or animals, or violence and armed insurgencies, or dangers caused by industrial, chemical or nuclear accidents, oil spills or leakage of natural gas. This expression shall also include any other danger specified as a natural disaster by the National Natural Disaster Management Committee.

b. The Union Government shall, in order to implement the provisions of this law effectively and successfully, form the National Natural Disaster Management Committee comprising a Vice-president as the Chairman together with suitable persons. The region of State Government shall, in order to provide close supervision for effective implementation of natural disaster management in Self-administrated Division or Self-administrated Zone, district, township, ward and village tract within the Region of State, form Natural Disaster Management Bodies comprising suitable persons and assign duties and powers.

c. If natural disaster become, communicates the above committee and manages to minimum destructions.

#### **5.0 MANAGEMENT PLAN AFTER NATURAL DISASTER OCCURRED**

There should be emergency response for finding the victims, caring and resettlement as following:

- a. Finding the lost victims during disaster



- b. Transportation the victims to safe and temporary place and resettlement
- c. Supply the foods, drinking water, blanket and other necessities
- d. Requesting cooperation and accepting volunteerservices of civil services, personnel, members of the Fire Brigade, members of the Red Cross, well-fareand members of social organizations and non-government organizations within disaster affected regions to participate in appropriate roles in disaster management activities.
- e. Undertaking and supervising the prevention, protection, and healthcare in order not to spread the outbreak of contagious diseases caused by natural disasters to other Region or State or neighboring countries and those from other Region or State or neighboring countries to the region in coordination and organization, Ministries, Government departments, and organizations, social organizations, and other non-government organizations.
- f. Arranging security and the rules of law in disaster affected area
- g. Collecting data on damage and losses caused by the natural disaster and compiling and keeping the record
- h. Performing other duties assigned by the Union Government and the Natural Committee.

## 6.0 CONCLUSION

**URSP Mill**has planned to prevent and be minimized damage and losses when emergency condition, natural disaster occurred by communication and be under guidance of Natural Disaster Committee. Training program is planned as follow:

Sr. No.	Tentative Month	Title of Training	Department of Training	Period Days	Remark
1.	January	Fire protection and extinguishing	Fire Brigade	3	Factory manager nominate suitable employee as trainee.
2.	May	Do and don't when facing natural disaster	Fire Brigade	3	
3.	September	First aid	Health and Sport	3	



**10.1.8 Parameters, Procedures, Time Schedule, Specified Place, Frequency and**

**Approved Methods for Environmental Quality Monitoring**

Environment, air, water, soil and noise of **URSP Mill** were monitored as following procedures:

10.1.8.1 Monitoring the environment air

10.1.8.2 Monitoring the environment water

10.1.8.3 Monitoring the environment soil

10.1.8.4 Monitoring the noise on environment and employee

10.1.8.1 Monitoring the Environment Air

Nilar Pulp and Paper Co., Ltd (URSP Mill)

Nilar Pulp and Paper Co., Ltd (URSP Mill)													
Sr. No.	Parameters	Unit	Measure ment Methods	Time Schedule	Measured Place	Frequency	Recorded Method					The Standards and Reference*	
							Previous and Present Data Comparison Method						
							Previous Data		Present Data		More/ Less		
							Date	Value	Date	Value			
1.	The particulate matters PM <sub>2.5</sub>  PM <sub>10</sub>	µg/m <sup>3</sup>  µg/m <sup>3</sup>	HAZ Scanner Model EPA	October April	the blank space between the main building and the store in the factory yard	Twice a year						10 – 1 year 25 – 24 hours *NEQ(E)G 20 – 1 year 50 – 24 hours *NEQ(E)G	
2.	Sulfur Dioxide	µg/m <sup>3</sup>										20 – 24 hours 500 – 10 minutes *NEQ(E)G	
3.	Nitrogen Oxide	µg/m <sup>3</sup>										40 – 1 year 200 – 1 hour *NEQ(E)G	
4.	Ozone	µg/m <sup>3</sup>										100 – 8 hours daily maximum *NEQ(E)G	

\*NEQ(E)G – National Environmental Quality (Emission) Guidelines



10.1.8.2 Monitoring the Environment Water

Nilar Pulp and Paper Co., Ltd (URSP Mill)

Nilar Pulp and Paper Co., Ltd (URSP Mill)												
Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Recorded Method					The Standards and Reference*
							Previous and Present Data Comparison Method					
							Previous Data		Present Data		More/ Less	
							Date	Value	Date	Value		
1.	5-day Biochemical Oxygen Demand	kg/ADt	APHA-AWWA-WPCF**	October	The drain from the factory outlet							0.7
2.	Chemical Oxygen Demand	kg/ADt	APHA-AWWA-WPCF	November								10
3.	pH	-	pH meter	December								6~9
4.	Total Nitrogen	kg/ADt	Spectrophotometer	January								0.2
5.	Total Phosphorous	kg/ADt	Spectrophotometer	February								0.02
6.	Total Suspended Solids	kg/ADt	APHA-AWWA-WPCF	March								1
				April								
				May								
				June								
				July								
				August								
				September								

\*NEQ(E)G – National Environmental Quality (Emission) Guidelines

\*\*APHA-AWWA-WPCF – American Public Health Association-American Water Works Association-Water Pollution Control Federation



10.1.8.3 Monitoring the Environment Soil

Nilar Pulp and Paper Co., Ltd (URSP Mill)

Nilar Pulp and Paper Co., Ltd (URSP Mill)													
Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Recorded Method					The Standards and Reference*	
							Previous and Present Data Comparison Method						
							Previous Data		Present Data		More/ Less		
							Date	Value	Date	Value			
1.	Aluminum	mg/kg	Procedures for Soil Analysis, 6 <sup>th</sup> Edition, ISRIC, FAO of the United Nations	October April	the soil sample from the blank space between the main building and the dining- room in the factory yard								
2.	Arsenic	mg/kg											
3.	Chloride	mg/kg											
4.	Copper	mg/kg		October April									
5.	Cyanide	mg/kg											
6.	Extractable Acidity	cmol/kg											
7.	Manganese	mg/kg		October April									
8.	P-Alkalinity	mmol/L											
9.	pH	mg/kg											
10.	Total Alkalinity	mmol/L		October April									
11.	Total Iron	mg/kg											



10.1.8.4 Monitoring the Noise on Environment and Employee

Nilar Pulp and Paper Co., Ltd (URSP Mill)

Nilar Pulp and Paper Co., Ltd (URSP Mill)												
Sr. No.	Parameters	Unit	Measurement Methods	Time Schedule	Measured Place	Frequency	Recorded Method					The Standards and Reference*
							Previous and Present Data Comparison Method					
							Previous Data		Present Data		More/ Less	
							Date	Value	Date	Value		
1.	The noise	dBA			The place of rice straw stored The place of the rice straw digesting The place of caustic soda storing The place of filling the rice straw to the digester The place of pulp sheets drying The place of finished goods storing The boiler room The blank space between the main building and the dining-room in the factory yard							

\*NEQ(E)G – National Environmental Quality (Emission) Guidelines



**10.1.9 Public Participation and Development**

There was the arrangement of the public participation at **Monitoring Working Committee** and **Monitoring Supervision Committee**, for the impacts of the production and distribution of pulp sheet by **URSP Mill**. The setting up these two committees was mentioned at 10.1 and 10.1.11. Moreover 2% of every year net profit should be expended as regional development fund as directed by government.

**10.1.10 Skill Development and Training Schedule**

There were total employee 130 persons [121 male and 9 female including security (other company person)] serving at said factory. They service at office work, production, maintenance (electrical, mechanical), laboratory, security, skill ethic, unity of them make the factory improve. The former, experienced person directs the new one to improve skill. Skill development of employee causes the productivity, safe, pleasant in work place, life of machinery and last, adverse impacts on environment decrease. Therefore, the following training program was arranged.

<b>Sr. No.</b>	<b>Title of Training</b>	<b>Trainee</b>	<b>Trainer</b>	<b>Period</b>	<b>Month of Training</b>
1.	Laboratory skill	Person work at laboratory	Laboratory expert	3 days	October
2.	Maintenance skill	Maintenance department	Maintenance expert	3 days	January
3.	Production Skill	Production department	Production expert	3 days	April

**10.1.11 Person and Organization Implement the Environmental and Social Management Plan; Estimated Expenditure**

10.1.11(1) Setting up the organizations

10.1.11(2) Scheme performed by environment and social management committee

10.1.11(3) Budget estimation for environment social monitoring, safe and health care, and reducing carbon

**10.1.11-(1) Setting up The Organizations**

**URSP Mill** produced the pulp sheet by using rice straw as raw material and distributed pulp sheet. Due to the production and distribution of finished goods, there were some impacts on environment. By monitoring these impacts and analyzing the results, it can be concluded that plant direct to the good or adverse condition. To monitor the impacts, performance should be made by own expert or others. Moreover, the employee,

production resources were in safe and health condition and destroying the environment must be avoided. To perform them, the group must be well organized. The setting up the organization at 10.1.1, duties and responsibilities at 10.1.2, monitoring and reporting at 10.1.3 were already mentioned. There were also supervision members as follow:

Environmental Conservation Department	one representative
Directorate of Industrial Supervision and Inspection	one representative
Township Health Department	one representative
Township Fire Brigade	one representative
Township Development Committee	one representative
Public related factory	three persons

The factory manager was fully responsible to the organization.

#### **10.1.11-(2) Scheme Performed By Environment and Social Management Committee**

- Budget allotment by factory owner or manager, contained at E.M.P.
- Perform monitoring as E.M.P if own expert can
- Connect other expert party to monitor if own expert cannot
- Arrange the monitoring by other experts, e.g., designate the place to monitor as E.M.P; water sampling; soil sampling; etc.
- Conclude that good or adverse condition, analyzing the monitoring data
- Connect the departments stated at 10.9.1 and request to nominate representative
- Invite the monitor supervision committee, report the monitoring results and was instructed by them
- Signboards, instructions, notice board, rehearsal speech were arranged as E.M.P for health and safe care, fire prevention
- Arrange the fire extinguisher, P.P.E
- Arrange the plantation to be sum, and noise shield

#### **10.1.11-(3) Budget Estimation for Environment Social Monitoring, Safe and Health Care, and Reducing Carbon**

<b>Sr. No.</b>	<b>Monitoring/ safe, health care, fire prevention, carbon reduction</b>	<b>Estimated Expenditure</b>	<b>Remark</b>
1.	Air quality monitoring (ambient) 500,000 × 2	1,000,000	Refer to GMES price of analysis
2.	Workplace air quality 300,000 × 2 × 7	4,200,000	
3.	Surrounding water quality 100,000 × 2	200,000	

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**Nilar Pulp and Paper Co., Ltd.**

4.	Surrounding soil quality 100,000 × 2	200,000	
5.	Wastewater quality 100,000 × 12 × 3	3,600,000	
6.	Safety precaution Personal Protection Equipment gloves, (rubber, cotton), goggles, boots, apron Safety belt, earplug, mask	1,000,000	
7.	Firefighting and prevention Firefighting rehearsal Fire prevention training Signboard, instruction	50,000 50,000 50,000	
8.	Health care Medical instrument and medicine Signboard, instruction Medical check-up	100,000 50,000 1,000,000	
9.	Plantation Fertilizer Transplanting Agricultural device Germicide, pesticide	50,000 50,000 50,000 50,000	
<b>Total</b>		<b>11,700,000</b>	

The responsible person to fulfil the environmental management plan and the estimated budgets for decommissioning the current condition and monitoring are shown in **ANNEXE-I**.

## **10.2 Commitment by Nilar Pulp and Paper Mill (URSP Mill)**

The following commitments are conducted by responsible person of Environmental Management Plan Report.

7. The particulars in this report are correct and true;
8. This report has been written by following the relevant legislations of Ministry of Environmental Conservation and Forestry [Ministry of Natural Resources and Environmental Conservation] and these legislations in this report have been followed exactly;
9. The commitments, the impacts reducing procedure to the environment and the plans have been complied fully and always;
10. According to the improved technologies, approved Environmental Management Plan for current condition will be edited to fill by the instruction





11. If intended budget amounts of decommissioning, mitigation measures of current situation and environmental management plan are not sufficient in usage, extra allotment should be planned.
12. The laws, regulation, policies of state and facts under permits, certificates, and regulations are conducted.

**11.0 CONCLUSION AND APPRAISAL**

**URSP Mill** produces pulp sheets and distributes to abroad. Dust and particulate matter are emitted by vehicles, generator sets, straw preparation, boiler stack and impact surrounding air. Wastewater was emitted to surrounding water by straw wash, machineries, tank wash, fiber wash, spillage, and boiler blow-down, reject water from water purification and back wash water. Solid waste as straw reject, rice husk and saw dust ash, packing materials of various raw materials were emitted to soil and noise by vehicles, generators, and machineries, digesters, and boiler impact the surrounding and human. By the analysis data of air and wastewater such as particulate matter  $PM_{2.5}$ ,  $PM_{10}$  and noise level and COD, BOD, TSS and pH were out of range of standard values of *NEQ(E)G*. So, the requirements must be fulfilled in future with full strength by **URSP Mill**. The possible ways for mitigation measure of impacts are implemented by factory using Environmental Management Plan procedures and advance technology.