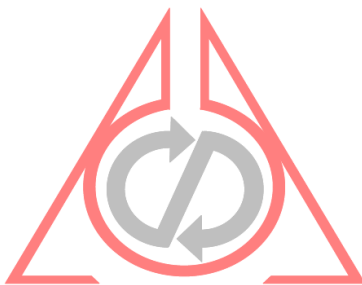
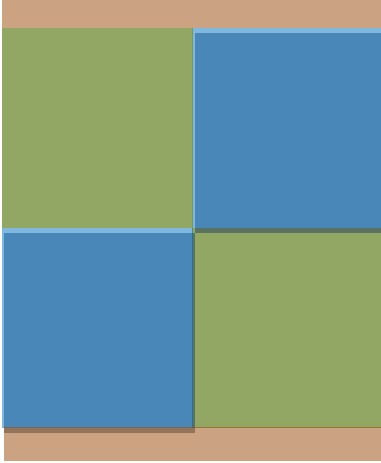


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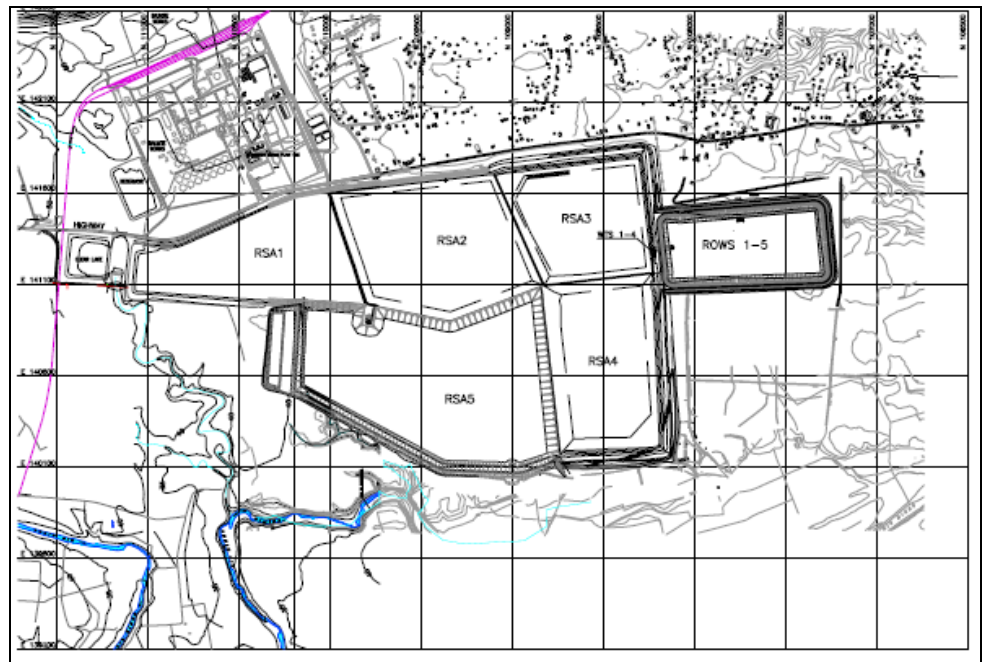
CD&A
CONRAD DOUGLAS & ASSOCIATES LTD.

ENVIRONMENTAL IMPACT STATEMENT

FOR THE PROPOSED CONSTRUCTION OF THE RUN-OFF
WATER STORAGE (ROWS) 1-5
AT HAYES, CLARENDON

MANDATORY PUBLIC MEETING REPORT

[Prepared for The National Environment & Planning Agency]



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ENVIRONMENTAL IMPACT STATEMENT

For the Proposed Construction of

RUN-OFF WATER STORAGE (ROWS) 1-5 AREA

AT HAYES, CLARENDON

Mandatory Public Meeting Report
on the
Environmental Impact Statement
for

The Proposed Construction of the Run-Off Water Storage (ROWS) 1-5 Area
At Hayes, Clarendon by JAMALCO

Held at the
Hayes Primary & Junior High School
Tuesday, September 7, 2010

Submitted to:
National Environment and Planning Agency, NEPA

September 2010

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

The National Environment & Planning Agency (NEPA) mandated that a public meeting be held in respect of the EIA for the proposed construction of the Run-Off Water Storage (ROWS) 1-5 by Jamalco at Hayes, Clarendon. According to NEPA's guidelines, the public meeting was convened at the Hayes Primary & Junior High School on Tuesday, September 7, 2010. The meeting was advertised in the Jamaica Gleaner and the Jamaica Observer on the following dates for at least a period of 21 days days prior to the meeting (see **APPENDIX 1**):

- August 15, 2010 - Jamaica Gleaner
- August 19, 2010 - Jamaica Observer
- August 25, 2010 - Jamaica Gleaner
- September 2, 2010 - Jamaica Observer
- September 6, 2010 - Jamaica Gleaner
- September 6, 2010 - Jamaica Observer

Copies of the EIA report were placed in various locations for the same period prior to the meeting. The reports are still available at the following locations:

- ✚ Clarendon Parish Library,
- ✚ Hayes Police Station
- ✚ Hayes Post Office
- ✚ NEPA's website: www.nepa.gov.jm.

In addition to advertising in the Jamaica Gleaner, the distribution of flyers, posting of notices and using a town crier were additional strategies used to announce the event in various communities close to the proposed project site.

The meeting was convened under the chairmanship of Mr. Mark Nicely, Principal of Hayes Primary & Junior High. A presentation on the findings of the Environmental Impact Statement was made by Dr. Conrad Douglas, President & Managing Director, Conrad Douglas and Associates Limited (CD&A), the Environmental Management Consultants. In attendance were representatives from Jamalco, the National Environment and Planning Agency (NEPA), Jamaica Bauxite Institute (JBI), Councillor Scean Barnswell and Community Leaders and Members.

Among the communities represented were:

- Hayes
- Blair Savannah
- Corn Piece
- Land Lease
- Raymonds
- Top Hill
- New Bowens
- New Town Community
- New Village
- Water Lane

There were 203 persons in attendance at the meeting held at the Hayes Primary & Junior High. The attendance register is shown in Appendix 5.

The meeting was recorded *ad verbatim* by a highly qualified and experienced court stenographer.

The salient points of the meetings are listed below and are also illustrated in the pie chart Figure 1.

QUESTIONS RAISED BY PARTICIPANTS AT THE MEETING

1. When will the project start?
2. What are the number of jobs that will be available?
3. What types of jobs will be available?
4. Will the height of the embankment disturb the view of persons living in close proximity to the proposed project?
5. Will a Complaints Unit be set up for person experiencing discomfort as it relates to noise pollution of the project?
6. How does Jamalco plan to address complaints pertaining to noise and dust pollution or any discomfort that apparently is associated with the plant's operation?
7. What provisions are made in the event that there is seepage into the groundwater from the mud lake?

8. Does the odour coming from the plant operations and mud lake has any adverse effects on health?
9. Will there be any disturbance in the drainage from the proposed project?

CONCERNS AND ISSUES RAISED BY PARTICIPANTS AT THE MEETING

1. Employment opportunities and preference for the community members to be employed in the event that jobs are available.
2. Noise and dust pollution
3. Concerns regarding seepage to the groundwater from the Mud Lake and pollution of surface water.
4. Access to potable water
5. Potential health impacts from the proposed project.
6. Issues concerning road conditions and its relation to Jamalco's operations.
7. Concerns for the impacts on drainage
8. Aesthetics concerns

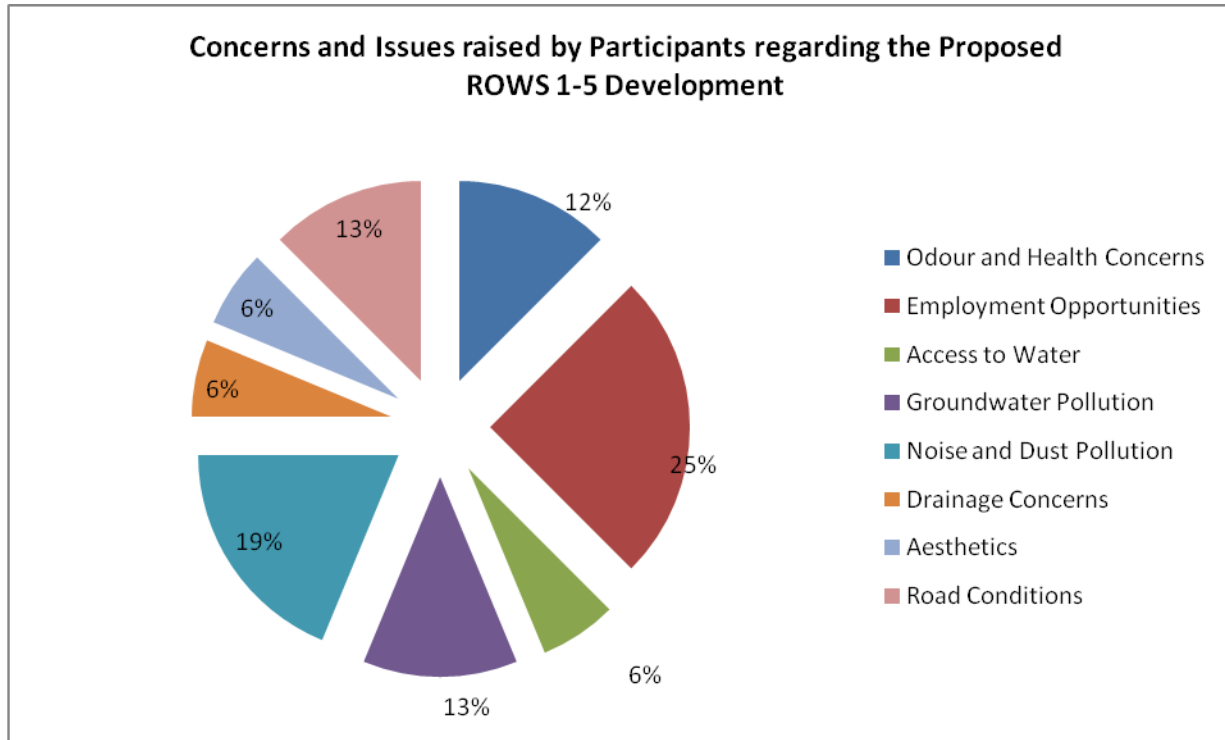


Figure 1: Concerns and Issues raised by Participants regarding the Proposed ROWS 1-5 Development

CONCLUSIONS

The mandatory public meeting on the EIS for the proposed construction of the ROWS 1-5 facility was presented clearly and thoroughly. The salient points, questions and concerns raised by individuals were effectively addressed. These were diligently recorded in support of the EIS review and permitting process being undertaken by NEPA.

VERBATIM NOTES

Tuesday, September 7, 2010

CHAIRMAN: Good afternoon everyone. As we are about to commence this very important meeting, we are going to start officially by asking Mrs. Ruthlyn Francis to lead us in devotion.

PRAYER SAID.

We wish to thank you Mrs. Francis for bringing us to the throne of grace. And I would like to take time out to acknowledge and welcome some persons in our midst and I start out with the representatives from JAMALCO and I ask you that you raise your hands as you hear your names called. Mr. Andrew Anderson and he is the Engineering Manager; we have Mr. Ray Williams he is the Project Manager; we have Miss Elaine Smith, Corporate Services; and we have Mrs. Pam White also from Corporate Services and we have Mr. George Morgan and he is the EHS Manager and we have Mr. Bobby Newman, CCC Group; we have Mr. Leo Lambert, Corporate Services Manager and we have Mr. Richard Hall, Capital Programmes Manager and we have Joseph McCarthy, Environmental Administrator and we have also Andrea Spence and she is the EHS Superintendent. We also have from Conrad Douglas and Associates, we have Dr. Conrad Douglas, he is the President and Managing Director. We have also have Mr. Wayne Morris, he is the Staff Engineer and we have Mr. Doran Beckford who is the Process and Environmental Engineer and he is all the way over there; and we also have our court's stenographer and she's Miss Joyce James sitting right there and we have persons from the National Environmental Planning Agency in the form of Mr. Errol Morris and also I am seeing right up front Mr. Scean Barnswell and we want to welcome all these persons in our midst today and we have not seen definitively anyone from the Jamaica Bauxite Institute but if there are any such persons here we want to welcome you as well.

We want to welcome also all the persons from the community, this is your meeting and you are the main reason why we have this meeting. The meeting is entitled or it is called a Mandatory Public Meeting on the Proposed Construction of the Run-off Water Storage commonly called ROWS 1-5 facility by JAMALCO. So it is a project that JAMALCO is looking to embark on. It's an expansion project and Conrad Douglas and Associates, they are a group of environmental consultants who operate on behalf of JAMALCO and they are here to articulate what might be the environmental issues concerning this project. NEPA representatives would also be here, they are the Government Agency responsible for approving such project and of course after the presentation would have been done, then we will seek to entertain all the questions, concerns, queries from the community representatives going forward. JAMALCO representatives are also here because there are some questions that the community may ask as it relates to what kind of jobs might be available, etcetera, etcetera, that would be

the JAMALCO representatives who would be able to adequately respond to those questions. I want to say this evening we have all the relevant persons here for this mandatory public meeting and we wish to have a very orderly meeting and we wish to accommodate everyone. At this point in time I am going to call on Dr. Conrad Douglas to present to us the findings as it relates to this project going forward and then afterwards I will come and facilitate the question and answer section. Please welcome Mr. Douglas.

APPLAUSE

DR. DOUGLAS: Thank you very much Chairman Mr. Nicely. Ladies and gentlemen, on behalf of JAMALCO and Conrad Douglas and Associates Limited I take great pleasure in welcoming you to this public meeting which is concerned with the Environmental Impact Statement for the proposed run-off water storage or ROWS as you will see abbreviated from time to time from residue storage areas 1 - 5. Before we get into the findings of what this EIS has shown us, I would like to stress a few points. The first one is that this is your meeting, this is your meeting because we are here to present what JAMALCO propose to do to you, to us, to the community and for the improvement of the efficiency of its operations and to obtain your comments, your views, any issues that you may have so that we may document these properly, efficiently and effectively as this is being done by a court stenographer, Miss James, and also we have a video being prepared as well. Now this is necessary because we have to make a formal submission to the National Environment and Planning Agency and as our Chairman told you at the very beginning, this is a mandatory public meeting, that it is mandated by law under the NRCA Act of 1991 which states that certain types of developments, certain types of projects must be presented to the communities which could be affected and their views must be incorporated and then we submit a verbatim report along with some preliminary analyses.

Now this has some very special origin, it is in the first instance just simply plain commonsense, if you are going to do something in the area you should consult the people but this originated primarily from what is known as Agenda 21 which came out of the Rio Treaty and it simply states essentially that anything that you are going to do, that the affected persons should be consulted and Jamaica is a signatory to that Treaty. In proceeding this evening I want to let you know that everything you say, every word you say is recorded verbatim and I want to let you know also that there is a register that is being prepared, it is here, we are asking you to record your name, the community or organisation from which you originate so that this record can be presented to NEPA as well. I would also want you to know that fact sheets have been prepared and distributed

so you can also familiarize yourself with the project. Now in doing this Environmental Impact Statement and in preparing for this public meeting, certain strict guidelines that are laid down by NEPA also had to be followed. Among them is that we had to advertise the meeting in various ways, in the two daily news papers for a minimum of twenty-one days and this has been done in both the Daily Gleaner as well as the Observer. In addition to that we had to announce the meeting in various communities through the use of fliers or public notices and in addition to that having a town crier; and members of the communities must have heard over Friday, Saturday, Sunday and also Monday and today people or a vehicle going through the communities announcing the meeting. So this is a requirement because we would like you to know about the meeting, its venue, the timing and so on so you can get every opportunity to come along and participate. Now then, let us look at what the findings of this project have been. I must give you a bit of history before I get into the specifics and one of the things that you all know is that JAMALCO has been operating in Jamaica for close to forty years now -- close to fifty years, thank you for the correction, close to fifty years now, and it is traditional as far as the company is concerned to operate within certain strict policy guidelines and values and included in them of course is the environmental safety and health policies and values. One of the things that the company pioneered here in Jamaica and probably indeed elsewhere in the world as well, is that in their operations they try to minimize or operate on a basis of zero discharge to the environment and so JAMALCO has always operated what are known as residue impoundment or storage areas. In other words, in the earlier days, ladies and gentlemen, of the bauxite aluminium industry in Jamaica we had situations in which some plants, because we were not aware of the geology at the time and what would happen to the environment, simply operated by disposing of bauxite residue commonly known as red mud in some unsealed areas but JAMALCO used advanced technology at the time and continues to improve the technology to impound the residue. Now this has redounded both to the benefit of the environment as well as to the benefit of the plant because what this does is to ensure that valuable materials, water and certain types of chemical solutes such as alumina and caustic soda are recycled to the plant for re-use and to the extent that this is done, it minimizes the amount of fresh water that is needed and must be abstracted from the well and also fresh material in the form of bauxite, caustic soda and so on. So we need to bear this in mind now. What does the company propose to do there this time around? They propose to construct a run-off water storage area, ROWS 1-5 as mentioned previously and this would be used to store and control the storm water run-off from the residue disposal areas and recycle the collected water to the alumina refinery as I said for re-use in the process. It's a closed circuit bio-alumina plant that is operated here at Halse Hall.

Now this slide simply shows the existing situation and what is proposed. Where you see RSAs 1, 2, 3, 4 and 5, these are residue storage areas that are already in existence. Where you see this diagram here, lay-out is actually the refinery itself which I stated earlier is in existence for fifty years. This is what we propose to construct, ROWS 1-5 to store run-off water from these areas. This is a satellite imagery or satellite aerial imagery of ROWS 1-5. You will see just what I pointed out to you earlier on, one, two, three, four and five and of course this was under construction at that time when this was taken. This is where it is proposed, this green area, to accommodate or construct the run-off water storage area. The proposed storage area, ROWS 1-5 is to be located to the south of residue storage areas three and four and this will be constructed on approximately twenty-eight hectares of land inclusive of the land area for access road adjacent to the residue storage areas three and four. The proposed storage volume of this residue run-off water storage area is approximately 5.2 million cubic meters, that is a significant volume and hence all the precautions were taken in the design of the facility to ensure its stability and structural integrity and safety and that it can withstand the various adverse conditions. The run off water storage area will utilize a base layer incorporating combined compacted clay and a high density polyethylene (HDPE) geo-membrane. These are sealants and they are very important and what it does is to ensure that the area is practically impermeable, so it is really to protect against any solute at all going through the soil and into the groundwater resources and it is a major mitigating step in the entire construction process and this takes place within the excavation that is at the bottom and also the embankment or the side of the residue storage area, both the residue storage area and also the run-off water storage areas.

Now this is just a diagram, a drawing which is for construction and it is detailed and there are several of them in the EIS and incidentally I must again state that the EIS was placed in various public places to which you have access such as the police station and the post office, Clarendon Parish Library and Parish Council, and this just simply shows in outline what this will look like basically and the details of all the things that are designed to the level for construction are in the Environmental Impact Statement. This is a cross section of the lining system, I hope you can see this clearly, but essentially what it is showing here is that you have compacted clay, and you have the liner which is this red line that you are seeing here, this is the synthetic liner or geo-membrane and then we have sand and then we have a geo-textile soil on top of that, that is what it is showing. The proposed construction of ROWS 1 – 5 will not encroach on the one hundred year flood level as predicted by the most recent flood studies report carried out by the Water Resources Authority of 2006. This is important to note because what it is saying is that for the most intensive rainfall events and

floods you will not have the constructed run-off water storage area anywhere close to this sort of situation, so it took this into account as well, the worse most intensive rainfall and gully basin in that area in the design. In addition, it is constructed or designed with buffer zone to steer away from the community as far as practicable and also to ensure that there are certain screens that are in place, screening trees that will protect the communities and any facility that is nearby. It is also at a minimum of some two hundred and twenty yards -- some two hundred meters from these existing developments. The design has taken into account possible flooding of the Rio Minho and its flood plains as we mentioned earlier on.

Now, in any sort of project it is always a proper thing to carry out what is known as an alternative analysis and what this alternative analysis does is to look at the various options or other things that you could do apart from what it is proposed to do and when this was done it was found out that the best thing to do is what is proposed, that is, to do the run-off water storage area as designed. This is known as the preferred alternative but in arriving at the preferred alternative, that is the so-called rationale and justification for its selection, these were the other alternatives or options that were looked at. The first one is take no action whatsoever and the consequence of doing that, would be unacceptable given the identified risk of storm water overflow during a large storm event. If you have this then you are going to have various kinds of problems with solutes going to the environment that would cause various types of negative impacts which you do not want. The next one was to treat and discharge the effluent to the Rio Minho. JAMALCO needs to remain a zero discharge facility, therefore it does not intend to treat and discharge effluent to the Rio Minho River at all. Site the lakes somewhere else, that is the run-off water storage facility, the alternative of siting the lake elsewhere did not meet the required criteria of operating under all conditions. You must bear in mind that one of the primary objectives of putting this in place is to give you more storage facility for storing red mud or bauxite residue and this takes place whenever you have run-off on top of the residue, it just simply finds somewhere to store it and this is why it is called run-off water storage. If you don't have somewhere to store it, then it means you are going to either shut down the plant which you don't want because you want to keep your production to the highest level or you are going to cut back the production rate which you don't want either because in doing that you are going to be simply maintaining certain types of costs, overhead costs and you are producing less products and therefore your income is going to fall, so you have to take these things into consideration. What you are therefore, striving for, ladies and gentlemen, in doing all of this while protecting the environment is also to gain greater efficiencies, greater cost effectiveness and greater competitiveness so you can continue to export your products to

the overseas market and earn an income profitably from your operation. Now, uses of this run-off water storage facility are clear, and I have stated some of this already; minimise the holding of storm water and allow for better consolidation of the residue in the residue storage areas thus enabling the residue storage areas to store greater volumes of residue. So this is a great advantage here. It compliments JAMALCO's policy of zero discharge of storm water and allows greater re-use of water between the lake and the refinery. It also reduces the demand for fresh make up water as I stated earlier on. It offers a more environmentally safe operation for the residue storage areas ensuring ongoing compliance with the Legislation and Regulation of the Government of Jamaica. So it is designed with certain types of policies and legislations, regulations and standards in mind and it ensures that it meets all of these standards and all of these legislations and regulations. The receiving environment, that is the environment in which the facility will be constructed or placed. Now this is a very dry maritime type weather condition environment, it is also technically known as a xerophytic environment and the vegetation and the animals that you find there are suited and adapted for those conditions. For example, you have the acacia or cactus as we call it that is there and as you know this type of plant is naturally adapted with various kinds of thorns and they have thick cuticle or waxy surfaces so that, for example, they can contain a little water and store it and continue to thrive. These are some of the things that you find in this type of vegetation. The terrain is predominantly flat scrub thorn type as I mentioned, grassland. There are no threatened, rare or endangered species of either plants or animals at the proposed project site and I would like you to make a special note of it, nothing in terms of the ecology, plant life or animal life will be threatened by the project. The area proposed for construction of the facility is abandoned agricultural land for which change of use has already been obtained. Now, this is the roadway through former sugarcane lands looking south of the residue storage area and this is the typical type of vegetation that you see in and around the area. This is also a type of abandoned agricultural land where there is some livestock rearing still taking place from time to time and again you see the grass type predominant vegetation along with some acacia and some other trees. This is a roadway that is flooded and is located in the Scrub Savannah. Again you see some cattle and here you see the South Dyke Wall looking north, this is the Dyke Wall. So on completion this is what the bank or embankment or dyke of the run-off water storage area will look like. Again this shows another view of what the bank or dyke wall will look like when it is completed and vegetated; and this adds a lot of values in terms of the presentation, its aesthetic appeal and also the fact that it's covered over with vegetation means that it naturally will be a mitigating action in terms of dust suppression. Now during the course of our field

investigations we came upon this bone yard, animal bones and it struck my curiosity and in a certain forum earlier we were discussing it and I was informed that probably it was as a result of the slaughter house that was nearby, that they disposed of animal carcasses, so I don't think that was associated with some of the activities like praedial larceny that you might be seeing in the area, it appears to be legitimate. In the area, what is the current use apart from being abandoned agriculture lands? We see that solid waste has been thrown in the area, it is unmanaged, it's littered, here we have solid waste, tyres thrown away and so on. Now the dominant or most common plant species in the project site area were wild poponax, same as acacia tortusa and Seymour grass and due to the current agricultural use of the site the flora inhabiting the proposed site is very very limited. Only one migrant of a total of 15 birds species was identified. Insects were fairly well represented and most noticeable were butterflies and bees and these insects function primarily as pollinators which we all know what they do and we didn't come across any reptiles during the survey, however we recognize from literature, surveys, that there is likely to be occurrence of certain species in the study area, that is not rare or endangered or threatened again, let me emphasise that. And just to give you an example of some of the species that we came across, most of these we all know, we see them from time to time; here we have agave species which people use for Christmas tree sometime during the year and we also have a wild callaloo, again we all know that; Devil's Horsewhip we know and of course Nightshade, Dumb Cotton, Spanish Needle, Chinese shaving bush and calabash. We also have there Old Man's Beard, which is common along transmission lines, along electrical transmission lines and of course water grass, Morning Glory, Belly-ache-bush and the same wild Poponox. Again shame Old lady, mimosa pudica which we all used to enjoy playing with as children, lead tree, logwood, guango, West Indian ebony, dogwood and Broomweed, Chinese lantern, Cockspur, grass, Bastard cedar, Vervine and the rest that you see here are scientific names, none of these are rare or threatened species of plants. Now there are several major benefits of the project to both the proponent as well as the community and the nation and we need to recognize this. The total investment is to the order of about US\$80Million for both local and international purchases of goods and services. There will be direct and indirect employment opportunities and you have some 185 to 200 jobs at the peak demand during the construction period which will last for about eighteen to twenty months and the type of artisan skills that will be required, skilled labour such as operators, truck drivers, electricians, among others and of course unskilled labour as well. Improvement will take place in the efficiency of JAMALCO's operation and therefore also in the competitiveness of their products to continue to maintain their place in the international market place. There will also be greater environmental benefits and major safe guards to the environment.

So the benefits are major and it justifies the expenditure that is being made. Potential negative impacts, these are changes in natural drainage which you cannot avoid but you can mitigate against. Sedimentation because you have to clear the vegetation, clear the area. Site preparation; air quality and construction, air quality only during construction because we mitigate against it, again there is mitigation through dust suppression. Noise and vibration during construction; loss of biodiversity and as said there is not much biodiversity, not great biodiversity in the particular specific environment footprints of the ROWS. Ground soil conditions could be impacted, of course depending on the usage of the twenty-eight hectares permanently and the aesthetics could change especially during construction and restored on completion of construction. Pollution of surface and groundwater, all this is a potential but every step as I pointed out earlier on has been taken from the design to put in impermeable dual clay liner as well as synthetic geo-membrane. Uncontrolled discharge of storm water could be a problem but that is one of the reasons why the facility is being constructed in the first place and other steps have been taken to ensure control. Change in land use, clearly there must be change in land use and you must also bear in mind that these changes in land use have also been applied for already and have been granted. This is some of the impact mitigation steps; in terms of the removal of vegetation, loss of habitat, aesthetics, this will be mitigated through landscaping of the surrounding areas. Fugitive dust, air pollution, during construction -- a dust suppression system will be put in place to reduce wind-borne particles. Erosion, sedimentation, and pollution of groundwater -- the storm water lakes will have a dual liner system with, one, an impermeable geo-membrane being placed on top of and two, a compacted clay liner/sealant. There have been no groundwater pollution from the disposal areas since the inception of Jamalco's Storm Lake operation. Landscaped areas will minimise any run-off. Solid waste handling and disposal to be handled in accordance with Jamalco's existing handling and disposal regime and GOJ regulations. Noise, leaks, exhaust from construction implements, implements such as petrol, oil, lubricant storage -- all equipment will be monitored and maintained throughout all various phases of work. Storm water management -- zero discharged facility, as I mentioned earlier so we won't have any discharge to the environment under even the most severe conditions. And I think ladies and gentlemen this presentation took longer than anticipated. We are now at the point of question and answer and as I mentioned at the beginning, this is your meeting, we are here to say what we found, what JAMALCO proposes to do in terms of maximizing the beneficial impact to the refinery, and to the community and to the nation and we also state what they will do in terms of ensuring that the potential adverse or negative impacts are in fact mitigated. Now I must mention again, that this is your meeting and we would like you to raise your issues,

raise your concerns, state your concerns, say anything that you think could be useful, relevant, germane; any questions you would like us to ask us and in doing so I must state that this is not the end of the process, after tonight's meeting we will have the verbatim report, detailed word for word that is going to be prepared with the register and sent in to NEPA and further to that NEPA requires that a thirty day period be given to the community, in this case the entire nation, if anybody still has any objections or concerns or objections you can still write into to the Agency and to support that please bear in mind that the report will be in the places that I mentioned for viewing. Thank you very much for your kind attention.

A P P L A U S E.

CHAIRMAN: We would like to thank Dr. Douglas for sharing with us their findings and in a nutshell what has been presented to us, as production continues at JAMALCO, there is going to be the need, the necessity for additional storage facilities and that not putting these facilities in place is simply not an option and Conrad Douglas and Associates Limited have presented to us what is considered to be the best possible option taking all the related environmental factors into consideration and they have also enlightened us in terms of the processes that will be involved, the advantages and the benefits and the minor challenges that will be encountered. It has also been even reinforced that this is a mandatory meeting and that you have an opportunity to share your views, your concerns, your questions and so we open now for the question and answer section and the protocol is that once you stand to ask a question you are acknowledged, you are kindly asked to indicate your name and the community or organization which you are from or which you represent. I will simply echo that and then you will be allowed to ask your question, and so the floor is now open for questions to be asked in relation to this project.

DR. DOUGLAS: Ladies and gentlemen, just to expand the point made by Mr. Nicely, in asking questions I ask you to simply state your name and state the community or organization you are from so this could be recorded and if needs be we can contact you again afterwards. Thank you.

CHAIRMAN: The floor is open.

MRS. ROBINSON: Good night ladies and gentlemen. My name is Mrs. Robinson, President of the Youth Club and I live on the main Hayes Road. My question is this. When I get up in the mornings I am already smelling an acidic scent some of the times and it is strong. Now building this other drainage facility, is it even going to be worse?

DR. DOUGLAS: Mrs. Robinson is the name? Thank you for the question. Firstly what you are smelling in the morning is not acidic, we know what you are saying, it is not acidic, it is a scent that is associated with alumina refineries and plants the world over and you will not be experiencing anything that you might be experiencing at this time, it won't be any worse.

MRS. ROBINSON: Does it have anything to do with health for people who have respiratory problems and things like that?

DR. DOUGLAS: Not at all. Let me tell you, there is need for more research work to be done on the matter and I am glad you have raised the question but let me tell you what it's likely to originate from. In the bauxite industry and in the case of Jamaican bauxite we do have some organic substances somewhere in the region of about 0.1 - 0.2% which is in the form of dead decaying vegetable and animal matter and this is the sort of thing we call humene or humic acid; you remember when we talked about humus in the soil and all of that and how it is important for proper soil structure for things to grow properly, that is what is there, some decaying vegetables but when this gets into an alumina plant it reacts with caustic soda and you have other organic substances that are added to the plant from time to time such as crystal modifiers for example and synthetic flocculants and you remember before the days of synthetic slocculants we used to also have wheat flour in the form of sorghum flour and also corn starch and so on. So when this reacts, you get various compounds that are formed; the lower molecular weight compounds are what they refer to as esters. These are innocuous compounds that vary and it varies as you can probably tell this meeting yourself depending on the time of the day and also depending on the time of the year.

MRS. ROBINSON: Mostly in the mornings or late at nights.

DR. DOUGLAS: So I just want to let you know that this doesn't have anything to do with it and there is no health related issue.

MRS. ROBINSON: How are we to be sure?

DR. DOUGLAS: This is why I said to you at the very outset that probably there is scope for more research and development but most importantly this is run-off water storage, run-off water, water, so there is nothing more of that nature that will be added as a result of the facility.

MRS. ROBINSON: Okay, thank you.

DR. DOUGLAS: And thank you for raising that question and it's a very important one and I think the entire sector needs to look at it at some future date.

MRS. FRANCIS: Ruthlyn Francis. I have been living in this area for almost thirty-nine years, right on White Road. People have been employed at JAMALCO and I understand when the plant was in operation the people in community would benefit but what I have discovered that many people from Hayes who have been to JAMALCO or when these projects have started not finding any jobs. I would like to know if you have an estimated number of people that you will employ.

DR. DOUGLAS: That was stated earlier on Ruthlyn and it stated that some one hundred and eighty-five to two hundred persons will be employed at the peak of the construction process.

MRS. FRANCIS: My next question is when these projects are being implemented there are people who have been given contracts, people who have been asked to take on the people representing your company, or whichever company, and many times people have gone through, what must I call it, the health this and that and other things to get a job and they don't get a job, and then there is the problem of people getting what I call in Jamaica grease palm, sell work thing, that if you can't give the person who is going to go give you the job a ten thousand dollars or a five thousand dollars you cannot be employed and if I had ten thousand dollars in my pocket I don't want no job, so if I have to pay ten thousand or five thousand to grease a person's palm to get a job, I would do a little project or do a little selling and help myself. I really want to ask that the people who are responsible to take on these people cut out this grease palm thing because many people don't have the money to give to grease the palm and because of that they are in dire need of a job and because of the grease palm thing they don't get the job and I really ask that some consideration be given to people in the community of Hayes, and I don't mean right here so, I mean Halse Hall, Corn Piece, Corn Piece Settlement, Savannah coming right back around. We know this area, I think you know this area, it is a distress area especially when the sugarcane cane crop is off and the parents are having difficulty to send their children to school and even to find them a proper meal, so my request Dr. Douglas is that some consideration be given to the people in the community irrespective of their educational ability, because you have skilled and unskilled but not taking people from outside to bring them in to do the work that people in the community can do. Thank you.

APPLAUSE

CHAIRMAN: Thank you for your question and for your recommendation and so it's not only questions but if you want to make a statement or echo something, you are also free to do so.

DR. DOUGLAS: What I must say it's unfortunate that that sort of thing in terms of grease palm takes place. I believe JAMALCO has a policy to deal with things equitably and fairly.

MR. WILSON: Good night everybody.

DR. DOUGLAS: Good to see you Mr. Wilson.

MR. WILSON: Clinton Wilson, President of the Jamaica Watchdog Citizens Association. A point of correction Mr. Douglas, you answered the lady about the thing that she smell in the morning....

DR. DOUGLAS: Tried to.

MR. WILSON: coming from the mud lake and that is an erroneous answer, your answer is erroneous, and I would say three multiply erroneous.

DR. DOUGLAS: Please tell us how it is erroneous, that is why we have the meeting as you know.

MR. WILSON: You know ladies and gentlemen, it's over eighty different chemicals used over that plant and like the Chinese, we hope they will come and do better than JAMALCO. We know human resource is the most important resource on earth and the Chinese make very good use of it but Jamaica don't make use of it and so we hope that they will come here and do better, but let me here say of the eighty chemicals, you notice they have a line that run back to the plant because they use the plant so they put it over what they call the mud lake and the thing froth up the whole of that thing during the day, the water come up and all these chemicals and froth up and when the breeze blow, the froth blow up in the air, then crystallize and it fall down on us and the plants and the houses like sand granite. You see the little things that resemble salt, it falls on us, it burns us, it smells bad, all of that is chemical that is used at the plant. So what you say to the lady is not right.

DR. DOUGLAS: I asked you one thing, as usual, you know that I am a scientist so you have to be specific, so when I give you a plausible reason for what is happening, it is based on science; you say what I am saying is wrong, so I want you to give me your scientific objective explanation as to why.

MR. WILSON: I have just told you about the eighty chemicals the people smell over by the mud lake.

DR. DOUGLAS: I said the same thing but I tell you how the chemical originate, where it come from.

MR. WILSON: Where it come from?

DR. DOUGLAS: I told you that you have organic material in the soil, let me finish and it is very important and you know that, you and I have discussed these things over the years, it's the organic material in the soil, bauxite, and also reactive material from what is added to the plant in terms what is known as flocculants for red mud and you know that as well as crystal modifier and I am telling you what these chemicals are likely to be. Mrs. Robinson started out by speaking about the acidic thing, there is nothing at all in terms of anything acidic associated with any of those requirements, it's the caustic soda which is an alkali, this is why I have to make certain I state scientific factors. You mentioned a point about what is causing the frothing and so on, anything in the system that results in something like that and it can happen and nobody is denying it, it results from what is known as surfactants and I really want to get into the detail about surfactants.

MR. WILSON: Don't bother get into science.

DR. DOUGLAS: No, let me explain to you Mr. Wilson, because we need to know, that is why we are here. Surfactants are things for example like detergent that you use to wash clothes and so on which we handle in our backyards and laundry and so on and so forth and whenever you use that soap it suds which is something similar.

MR. WILSON: You know that when all of these chemicals get together its chemical reaction and it affects the people, its does affect the people.

DR. DOUGLAS: We will talk about it some more afterwards if you want.

MR. WILSON: I am moving forward, I congratulate you for this run-off.

DR. DOUGLAS: Run off-water storage. Thank you very much.

MR. WILSON: Not because they really want the water over the plant but then, and we should be brutality frank, the mistake that was made years ago by not using the synthetic sealing to seal the mud lake all of them up the road, and

the NEPA people not doing their work, we know that, everybody know that

DR. DOUGLAS: That is a general statement Mr. Wilson.

MR. WILSON: I am saying categorically that they are not doing their work and they be fired, that is what I am saying because when you look out on the road, all of those lakes, because remember its not clay, these lakes are built from old Spanish Jamaica, the rich cane soil, because under normal circumstances the fish ponds are built from fifteen percent clay, you know that, much more a dangerous thing like this, and so it is very good you consider now to build the run-off lake not for storage of water but to catch all of those effluent that is coming on the road and running all over the place, you understand me and they let it gravitate and store down in that place so you can re-use them over the plant. So, what happens, the thing is JAMALCO made a mistake by not sealing all of those lakes ladies and gentlemen that you see on the road side, they burst from left, right and centre. Every day they throw marl and whatever and it is still bursting out so what they are doing is making a run-off base so they can catch it down the road and pump it back over the plant, that is a good thing, you understand me, you can do that but what happen to what is happening underground because right now we have our problems with water and you make a another erroneous statement by saying fifty years since the plant has

DR. DOUGLAS: Just for accuracy, the plant is not a fifty year old plant, fifty years is the total operation of Alcoa in Jamaica; remember Alcoa started out in mining and shipping bauxite.

MR. WILSON: Right, but thirty odd years is pure pollution, because I have with me, Mr. Douglas which I want the goodly gentlemen -- anybody come here from JAMALCO? A number of persons, because you have people who don't answer question when people call and make complaint, so what we need now, there is a lot of iron in those ponds over there, we are making a recommendation, because there is -- we are going to do the thing in the reverse order, started bad so we make that pond, make the thing run down inside there, in the reverse order what we are going to do now is advise the Chinese, I understand they are buying the plant, advise them to take out the iron outside the mud lake that we have here that pollute the underground water, take out all of those iron and then use the synthetic sealing and seal them afterwards. You understand me so that you can stop polluting the underground water because Mr. Lambert, I called you sometime ago about the citizens, at least we should consider the citizens, we have a lot of old people, and over fifteen years now I have been

carrying water in from May Pen and so a lot of people down here drink the water but when they go to doctor dem say the doctor don't tell them what give them the pressure, because when you give them all that chemical they absorb it as salt and it run up your blood pressure and you have asthma and everything. So what I am saying, Mr. Lambert, I have here from the Social Investment Fund, since as oonu not doing anything I make the first move, I put up \$1 million to move the pump from out of the foot of the lake and carry it go up a New Bowens.

APPLAUSE.

So guess what happen Mr. Lambert, what we will do is pump the water from New Bowen, to the people at Land Lease with the assistance from Government and others, so you people have to put into that and make the people get potable water to drink, you understand what I am saying.

APPLAUSE

So Mr. Lambert, I want you to note that and I am going to give you a copy of the letter Mr. Lambert so you can present it to the company so that we the people of Hayes, the inhabitants of Hayes can get good water fi drink, will get clean water to drink Mr. Lambert and then we can work with you with the other people who collect the big crumbs, we will work with you and see if other people can eat some food from the operation and that we can live. Yes Mr. Morgan, that we can live as good neighbours. That is my contribution towards this little meeting. I thank you.

DR. DOUGLAS: Thank you for your comments as usual, Mr. Wilson, still watchdog and as strong as years gone by. Anyway, for the purposes of the record, Mr. Wilson, you must know that JAMALCO operates one of the most comprehensive groundwater quality monitoring systems that you can find in the entire island of Jamaica. Ladies and gentlemen, this is a fact and the monitoring data is a matter of public record, it has to be submitted to various Government agencies on a monthly basis and in all instances the water quality is compliant with all of the water quality standards that are set by NEPA, the Ministry of Health and the Water Resources Authority and if you want more information it can be supplied to you, it's public knowledge and public data.

PARTICIPANT: That water all right?

DR. DOUGLAS: I don't know specifically which water Mr. Wilson is talking about but the drinking water supplied to the community is good potable water, drinking water. JAMALCO use the same drinking water.

CHAIRMAN: Thank you, lady at the back and then afterwards we are going to allow Mr. Barnswell to make his contribution. Could you start off by identifying yourself and the community you are from please.

MS ALLEN: Good evening everyone. Cassandra Allen from the community of Land Lease, Land Lease Farmers Association is currently looking over that community. I want to direct this question to the gentleman. Dr. Douglas being a scientist, I want to ask you, these pollutions that are being airborne, it affects the plants we have over Land Lease greatly because when the fruits come on the trees some of them turn black and a lot of them spot and that is what the people over there solely depend on to go to market to get their livelihood. How is it you can assist in compensating or assisting them to get the fruits and stuff to the market so as not for them to be jobless because some of them are elderly and can't come to the market. Thank you.

DR. DOUGLAS: Thank you for your comments Miss Allen. In the first instance, I just want to say that this particular meeting is about the run-off water storage and we must never lose sight of that, we must focus on that. Now, on the other hand you have various other issues and concerns and the one you raised concerns air pollution. Now, I suggest that what you do is to engage JAMALCO and probably discuss the thing, do a screening exercise to show whether or not any pollution or any impact on any crop that you might be growing is resulting from their particular plant. I just want to state clearly and objectively, what you need to bear in mind is that a black colouration on the plants could result from a number of things. For example, during extremely rainy seasons, very high humidity, high moisture and I am not saying this is the case, there has been no scientific examination but during those periods you could have various molds and mildew growing more profusely than during the dry season and if you don't have a pest control regime where you are applying fungicide on a regular basis you could have that kind of problem and you have the crops being affected so what you have to do is to work with JAMALCO and say let us set up a programme to make certain that you identify what is the cause of this problem and let's say you will exculpate yourself from this by just doing so, you are not responsible or you are, if you are responsible then you will do something to mitigate the problem, that is the way to proceed and I would recommend that approach, because JAMALCO is not here to cause any harm or problem to nobody.

CHAIRMAN: Thank you Miss Allen. We are going to allow Mr. Barnswell followed by Mrs. Robinson.

MR. BARNSWELL: Good night ladies and gentlemen. Can I see the hands of citizens from New Town Phase 1 and Phase 2. Phase 2. Sean Barnswell, Counsellor for Hayes Division. My reason for asking this question is that the proposed location is located to the west where I am standing and Phase 2 is to the east, little behind Vere Technical High School. These residents will be affected by it, affected in the sense that they will no longer be seeing the sun rising in the east anymore until it is almost 9, 10 o'clock, so I was hoping that persons would have been here from those communities to voice their concerns. While I was in the area on Sunday, the citizens heard of it and they asked questions, one of which is how high will this embankment be? Two, will the existing drainage that runs between Vere Technical and the proposed site be disturbed in anyway? Three, will there be a Complaints Unit set up for persons experiencing any discomfort as it relates to noise pollution? Will the construction of this project, run-off water storage system be done at nights and will there be noise pollution, dust pollution? How the company is planning to have these addressed.

CHAIRMAN: Thank you very much Mr. Barnswell, just giving Dr. Douglas some time to document your queries in order to respond appropriately.

DR. DOUGLAS: The first one was in terms of what is the height of the embankment. Counsellor Barnswell, I don't think the height is that high, sufficiently high to block out the sunrise in the morning, I don't think you have that. Remember we can discuss it in greater detail, but clearly you have the sun rising and you have the reflection in the sky and refraction as well, it's not coming across like that, so it will not affect the lighting in anyway at all, so you need to assure all the residents about that. In terms of the height, I do not remember exactly offhand, forty meter high, or feet I think, it's a matter that we are seeking clarification, I think I recall twelve meters, twelve meters is what I recall and that is what is in the Environmental Impact Statement, so that will be thirty-six feet roughly, so it is not that high, it is not any higher than what you are observing now. In terms of the drain, from the existing facility that is, the residue storage, in terms of the drain, a comprehensive drainage system has been designed and Mr. Wilson mentioned this awhile ago when he complimented JAMALCO on the project to say that this will collect material during rainfall and also bring it into the facility and re-cycle it to the plant, so there won't be a problem. I think there is a specific part of the drainage regime that you mentioned though and probably Andrew or Ray could elaborate on it, but if you could just state it again.

MR. BARNSWELL: Vere Technical and the proposed site.

DR. DOUGLAS: Between Vere Technical and the project site, I don't think we recollect any particular change in the drainage regime for that area, I know the design has taken into account collection, storage and redistribution and recycling, it's an important point you have raised and it's on the record and although Mr. Wilson said NEPA doesn't do any work, I see Errol Morris taking all of the notes about every major issues that are recorded here and you can give him a drink afterwards Mr. Wilson. Noise pollution, now there won't be any noise pollution at all during the operation. It is during construction which is restricted to day time hours which you might get a bit of excessive noise and in terms of collection, the collection is an ongoing thing; remember, JAMALCO operates a closed circuit continuous Bayer alumina plant so the entire period you will have material being fed to the plant and products being generated and other material being collected and recycled so the collection is ongoing and you won't hear any noise or have any disturbance from that. I hope I have answered your question. Oh, the Complaints Unit at JAMALCO. If you you have a problem at any stage at all, that is what they are set up for, so you formally make your complaint and call in your complaint and I believe they have have been generally quite responsive, they are structured to respond to the community. And if you read the EIS, you will see that they have all sorts of systems for communication generally, internally, externally, with the community, with the Central Government and externally if necessary under all conditions including emergency conditions. Dust suppression -- dust suppression is a natural thing that must be done. Now, dust can range from just simply nuisance and can induce various other kinds of problems so that during construction, from the moment you do the land preparation, you are going to have to introduce an irrigation regime which you would normally have water trucks which are going through the area on a frequent basis and wetting down the soil and this will happen throughout the entire construction period. That is your irrigation or dust suppression regime. As I mentioned in the presentation, when construction is completed you are going to re-vegetate the bank walls, the dyke, the sides of them using what is known as hydro-seeding or hydro-laser so that you will have rapid restoration of various types of grasses and shrubs on the sides of the dyke and that will prevent the formation of fugitive dust.

CHAIRMAN: Just before we take Mrs. Robinson and then I take you after, sir, Dr. Douglas wonder if you could just or perhaps a member of the JAMALCO team could give us some clarification as its relates to jobs, you mentioned one hundred and eighty.

DR. DOUGLAS: One hundred and eighty-five to two hundred at peak.

CHAIRMAN: The clarity sought has to do with what types of jobs would be available, what are the skills set that would be necessary for those kinds of jobs and the one hundred and eighty to two hundred jobs, are they direct from JAMALCO, so they are there and would there be other opening via contractors?

DR. DOUGLAS: I can't give you the absolute details, Mr. Chairman, but what I am prepared to and I put back this slide up again, so we are saying direct and indirect employment opportunity for a total of one hundred and eighty-five to two hundred jobs at the peak of construction.

VOICE: Ask one a de JAMALCO people to talk.

DR. DOUGLAS: I am going to ask one of them to speak to it as well. During the construction during the 18 months period they need skilled labour, truck drivers, electricians and others and then it speaks of unskilled labour and that is what we know about the demand for jobs during construction period. Does that satisfy the question Chairman?

CHAIRMAN: Yes, sir.

DR. DOUGLAS: Thank you very much.

MRS. ROBINSON: You answered some of my questions but the most important question is this, each time the lake is being built or there is a project going on, we see people from Spanish Town and Kingston and Mandeville and all over place and we have a lot of skilled people in Hayes, from New Point coming right down we have all the skilled people JAMALCO is looking for and a lot of them sitting down not getting the job and other people come from out of the area and get it. I am the President of the Youth Club, and there are youth who can weld, we have un-skilled laborer, we have a lot of them but people tend to come into the community and I am saying for those who are not speaking for themselves. Mr. Barnswell's question about Phase 1, the PA system that was advertising the meeting was so low I had to call Mr. Nicely and asked him when was the meeting and he said this evening and what time because a lot of people did not hear about the meeting, so when you see the chairs are empty, it's not interested they were not interested, they just did not hear about the meeting. The other question, JAMALCO -- I am going to open this gate, I am going to put it out there, I am the President for my Youth Club, and there are a lot of young men who are willing to work. There was one time when HEART take them and train them and with that training they are still at home sitting down. For me personally I would tell a lot of parents when they send their children to school and they get their subjects and planning to send them to college,

don't look to JAMALCO, look other places, why put all the pressure on JAMALCO, JAMALCO is for some people, not everybody. You spend so much money sending your kids to school and getting them their subjects and you still sending them to JAMALCO to work when they are not qualified, they are not Jamaica, send them out there but that's for me. But what I am asking make sure that these young men and these men who are qualified and have worked with JAMALCO before and are sitting down make sure they are first on your list of two hundred or one hundred and eighty odd to get the jobs. JAMALCO is in Hayes, this is our community, we should get first priority and I say that to you unapologetically.

APPLAUSE.

DR. DOUGLAS: Thank you very much Mrs. Robinson for your comments there. They are all recorded as a matter of record, the proceedings of the meeting. I must say in terms of job, they have given all the details that we know at this time, we fully appreciate what you are saying in terms of recruitment and I know JAMALCO appreciates that as well and will do everything to address that situation. The next matter that you raised was in terms of the publicity of the meeting. As I said at the very outset, and it's unfortunate if everyone did not hear of the meeting but all of the chairs here this evening could be filled if some persons did not choose to stand instead. There are a number of persons standing at the back and if you could come forward and take a seat, I am certain that you would pick up all of the chairs, but clearly a lot of persons heard about the meeting, and as I said at the beginning how it was advertised, it was done in the daily Gleaner and Observer for three consecutive weeks, that is one method. Next method was as I said we had someone with the recording system which you mentioned and you said it wasn't loud enough but they were going through the communities Friday, Saturday, Sunday, Monday and even today again, so that persons are informed. In addition to that we had fliers that were distributed throughout to make sure all of the communities and the community leaders in addition to that were told about the meeting and that is the very best we could do under the circumstances and it has worked to a large extent and I am happy to see you all here this evening and as I said if everyone should choose to sit all the seats would be taken.

MR. HAMILTON: When the work a start?

CHAIRMAN: What is your name? Leroy Hamilton. I wanted to know when the work a start.

DR. DOUGLAS: Let me say again what is in the Environmental Impact Statement and is in the fact sheet. Mr. Hamilton, this project should have been started before

the hurricane season so you could make certain to collect all the run-off water before on a timely basis. For any project you need a whole series of approvals; the environmental permit is included among them and even after this permit is being obtained there are other approvals to obtain and other approvals must be sought for spending the money and the money must come from Alcoa and the Government of Jamaica. Now, having said that, what was earlier stated in the EIS that in the event that everything should be in place and all approvals are met, then it was scheduled to start about November this year, I don't know if that date will hold. That is the answer.

CHAIRMAN: Thank you. Miss Francis.

MRS. FRANCIS: Francis again. I am a bit concerned Mr. Douglas re the noise during the day in construction and the dust for Vere Technical High School. I am the oldest member on the Board, over sixteen years and just Monday morning I was down there doing devotion and the suggestion or the opinion came up, if the dyke or whatever you call it is built behind Vere Technical High School and construction is done during the day, do you think that the school can function very well with that noise and dust that will be there during that session? I remember when we were up at that old school and when that mud lake was being built you had more dirt and dust in the classroom, black, green, yellow and blue and they had to remove us from there to here, I was in the movement, so what will happen to Vere Technical High School during the time of construction with the noise and the dust down there?

DR. DOUGLAS: Very important question you have asked. As I said earlier on, it is recognised that during the construction phase especially, there is the potential for the generation of fugitive dust because you have to clear the vegetation from the area and if it is dry and hot and windy, then you could have what is known as fugitive dust being formed and it could be dispersed to the communities including the school you mentioned, so what has to be done is to put a dust suppression system or regime in place and as I explained and this involves wetting or irrigating the area that is exposed throughout the course of the day and the frequency or intensity of the wetting depends on the level of dryness and the type of weather. For example if it is heavy rainfall you don't need to wet it but if it's very dry, rather than wetting two or three times a day you keep on wetting it as often as it requires, that is the nature of the dust suppression regime.

JUDGE FRANKLIN: What about the noise?

DR. DOUGLAS: Noise is something that you find from heavy machinery and equipment, such as tractors and trucks and so on, the bulldozers, etcetera. As stated at the very last part of this presentaton there will be an independent monitoring programme in place to see that all the heavy machinery and equipment that will be used, that they are properly serviced and maintained. This is the function primarily of the type you select in the first instance and how you maintain it and if something is not operating properly and it is too noisy, JAMALCO will simply take it out of the fleet and see to it that it is properly repaired. But even more than that, when we spoke about independent Env ironmental Health Monitoring, what is meant you have this system with people monitoring throughout the course of the month, sometimes two times per week, sometimes four times per week, ourselves sometimes included and what we do is to take special nstruments to measure noise which are known as audiometers and you have to inform JAMALCO if they are operating within or outside of the standard. If they are within the standard, then they are okay and they usually operate within the standard and you have different kinds of standards, you have standard for indoor house, you have standard for yard and standard for construction, industrial site and they can operate within the standard and I am sure they operate within the standard and the monitoring will have to be done to measure what the noise level is because I am sure that they don't want to disrupt the education of our children at all.

CHAIRMAN: Thank you Dr. Douglas. Towards the back, could you stand, sir.

MR. BUTTLER: Good evening ladies and gentlemen, D. Butler. You are saying that the project is going to take eighteen to twenty months, that is just a project that is going to take a year and six months so what about the noise from the bauxite plant which affect nearby communities over the period of years for fifty years roughly. Now you have a constant dust coming over to the community which Corn Piece is next door, and mi don't hear anybody say anything about the dust. You wake up in the morning, your car, your truck windscreen messy, you can't jump in the vehicle and drive without it cover. What I want to ask JAMALCO representative, what oonu a go do about that dust, it nuh good fi nobody health.

DR. DOUGLAS: Thank you, Mr. Butler -- are you through.

MR. BUTLER: I want you to answer the last part of the question if the dust affecting the community if it nuh do nothing to you health?

DR. DOUGLAS: Are you through now?

MR. BUTLER: For the time being.

DR. DOUGLAS: What I want to ask you if you are through because I didn't want to rush you.

MR. BUTLER: All right, the next thing mi a go ask 'bout, the road in the communities, the people use it and mi nuh hear nobody say anything about it. If you come into the community and yuh say boy the road bad and you say JAMALCO nah do nothing fi the people dem and basically yuh hear it coming from another set, JAMALCO a do this but JAMALCO nah do nothing for Halse Hall, Corn Piece, Raymonds, Savannah, very little, mi nuh see whey oonu a do fi the community. Oonu give out a contract to a few people and at the end of the day dem go through, fine and out of one community ten people get work and mi nuh see whey that benefit, you understand. All right, mi a go say something to oonu. If oonu a go up a Mount Oliphant, oonu have to take care of Mount Oliphant road, so what happen to the people from Mineral come all the way back yah so, what meck the road nuh better than that. Everybody only a talk about road and this and that and you say the dust nah affect nobody from the project and mi a tell you say every time yuh have the dust, yuh don't see nobody from there so don't tell nobody dust can't affect you.

CHAIRMAN: Thank you sir.

DR. DOUGLAS: Okay Mr. Butler, you are through now, I see you have taken your seat. You have raised a number of questions, let me put it this way, all of them are on the record and they are taken into account and will be addressed going forward. Now in the first instance you separated the project itself in terms of what I mentioned earlier about the dust suppression regime. As I told you there are plans in place to mitigate this impact of noise and dust already which I have explained. The next issue concerns dust and noise from the plant. In respect of noise from the plant, JAMALCO monitors its noise level and ensures it stays within the standard. In terms of dust from anywhere else apart from the project, of course there are standards to which the company operates and I am certain that they have dust measuring devices that are placed in communities; if this is not the case then you have to engage the company in a meeting and ask them to put dust measuring device to see if they are within the standard that is set by the Government of Jamaica, Ministry of Health, and NEPA. So that is in respect of dust. I would advise you to make a written complaint and representation to the company separate and apart from this meeting to try and discuss the matter. So that is the two responses in terms of noise and dust. In terms of roads, I do not know what the company's programmes are for road repairs and so on, but what I do know they try to facilitate

everybody in all the communities in which they work by trying to create and maintain roads for all the members of the community. In terms of the status, I don't know what the status is, I know it's a shared responsibility as well between Government itself and also the company and the company does it out of its corporate relationship and corporate consciousness. We all pay property taxes and the payment of property taxes is to see to it that one of the benefits you get is the repairs of the roads. So I don't know what the situation is. I know where I live for example, it is one of the purposes stated why you have to pay property tax, to see to it that the roads are repaired and so on. I don't know what is the status here but I can't answer you any better than that but you know that roads and so are public facilities that various agencies are set up, have responsibility to see that they are safe and properly maintained, that is all I can say about the road part of it. Counsellor Barnswell probably can answer the question far better than me.

MR. WILSON: What the gentleman is saying about the road, the gentleman is not asking JAMALCO to really fix the road, what happen JAMALCO emission blow and damage the people property and they put together some money and they give it to people who they choose to give it to fix the road. Some people I understand do the work but some people damage the surface of the road more. So it's the people's money that JAMALCO give to those people and those money instead of used to fix the road it damage the road and then those money disappear. The gentleman is saying that should not be, you should have consultation seeing that you damage our property and give us compensation, you should have consultation with us to see if we want it to fix the roads because over the years from both parties, my party and the other party, what they do they collect the money from JAMALCO and eat it off and nuh road nuh fix, you get mi, I am brutality frank, yuh get mi.

DR. DOUGLAS: I hear you.

MR. WILSON: So all along JAMALCO go up on the hill and if you go on that hill and go mine, guess what happen, the road up there is like -- a pure God Almighty tank put up there and where they mine a pure sea ball everybody a float, nah come a work and around the place, so the gentleman is saying it's double and triple standard and you must correct it. And Mr. Lambert I believe the money that was given to the community, we are getting legal advice to deal with that part of it because we nuh satisfy and we nuh cunnu munnu so we are going to do that.

MR. LAMBERT: I don't know which money you are talking about.

- MR. WILSON: Consult the Public Relations Department. I will write about it and thing for the people who desire to reap back their money because they never give permission so we will put it in writing. We have a legal personnel who is going to send the information to you and then you will understand it better.
- CHAIRMAN: Thank you Mr. Wilson.
- DR. DOUGLAS: Mr. Wilson clarified the additional point you want to make, you are happy now.
- MR. BUTLER: In a way whey Mr. Wilson say him know whey him a say. What mi have to ask, why is it JAMALCO don't set up a Health Centre for the whole community people so they can go to Health Centre every month and get dem check up. Let me tell you, JAMALCO, oonu nuh feel say the people in community affect by the plant, so they need a health centre eena the community like Halse Hall.
- DR. DOUGLAS: I think Counselor Barnswell would like to help us with the response to this.
- MR. BARNSWELL: Just to shed some light on the matter of roads, it is not JAMALCO's responsibility to repair roads, it's the Government's responsibility, whether Central or Parish Council responsibility. Since of late, there have been no road work because Government is now waiting on the Chinese money, if the Chinese money don't come we have no roads, so you can't really pressure JAMALCO. The tax on gas should have been used to fix the roads but that has also gone to pay back outstanding bills and gone to the Consolidation Fund. JAMALCO has assisted over time and up to four weeks ago I have been in discussion with them as it relates to the interior roads and they have decided to come on board, as I told you, it's not JAMALCO's responsibility but as a corporate company operating in this area they say counselor, I will try to help in whatever way I can which I am grateful for. As it relates to the drains that run in the various districts, they are also saying it's not our responsibility but where there is a need and as a corporate entity we will try to assist where possible so, I am saying they are doing their part. As it relates to health centre, JAMALCO has put in place a medical doctor that is there every week at the Raymond Health Centre so what I am saying, and remember we only have one health centre, it used to be where the old Hayes Group Facility used to be, it's now transferred to Raymond and that serves the entire Hayes district. Since lately several parents benefitted from the doctor that JAMALCO paid for their medical reports for free for the GSAT and basic schools, many parents benefitted. Hayes Police had to go down there to calm the parents and I even passed there and saw it myself, so I am saying JAMALCO is

trying to do their best. Let me go even further, JAMALCO has in place now \$14M for persons to access to do any small projects, a group of five to ten people can access this \$14M do any project. JAMALCO has also assisted students who have just left high schools and want to get a skill, whether it is cosmetology and welding, that is going on right now at Vere Technical High School. JAMALCO has also assisted several students in mentorship programmes where the students are now going on to tertiary institutions to the tune of \$350,000. I am saying they have contributed tremendously to Vere Technical High School. They have contributed to Hayes Primary and Junior High. Right now a Guidance Centre is being constructed. I am not saying there is no room for improvement but I am saying let us be grateful for what they have been doing so far. With expansion projects which have happened overtime many persons have benefitted from it, build up their houses, buy a little house, buy a car, send their children to school, everybody has benefitted but they are doing what they can do. Since of recent the road in New Village coming from Big Shop JAMALCO has assisted KIG in getting that road repaired. Let us give thanks to PCL who has been assisting overtime in repairing the road from Hayes main road to Corn Piece Settlement and to Cherry Tree and in and around. Ladies and gentlemen I am saying you are putting the burden of the Government on JAMALCO and it should not be. Let us be grateful. JAMALCO is planning now to come to stream, they are planning to come on stream to help us to light up the Hayes main road from the plant coming down. They are planning to go on a street naming project which would assist the Parish Council to name some streets so that people can now identify where they live. All I am saying ladies and gentlemen there are things happening, let us not be ignorant to the fact but get the information, attend the association meetings, participate in the Citizen Association meeting and then when we come to this forum we will speak to matters that didn't get to address at those forums.

APPLAUSE

CHAIRMAN: Thank you Mr. Barnswell.

DR. DOUGLAS: Thank you for your comments Counsellor Barnswell.

CHAIRMAN: Thank you Counsellor Barnswell and I just want to ensure that we stay on course, one of my responsibilities is to ensure that we stay on course and our main reason for being here this evening is to discuss the pending project and I want us to try as best as possible to stay on course and to ask questions pertaining to the water storage facility to be constructed. The gentleman here and then someone in the back.

MR. LEWIN: Good night ladies and gentlemen. Oneil Lewin, Corn Piece District, Vere Technical High School. Dr. Douglas, it's only unfortunate that the focus of the meeting has been derailed somewhat but I would be quite happy if I leave here tonight knowing that the community members are fully aware of the reasons for the construction and how it will operate. While your presentation was quite scientific, I am requesting that you sort of break it down in layman's term so they could have a full understanding of what really is happening. You referred to RSA, we know it as mud lake, so, in my own terms I actually see it as basically draining the liquid from the mud lake but I won't attempt to explain, I will leave that to you, I am asking that you do so that everybody leaving here will have a basic understanding of exactly what was presented. Secondly, I am asking what provision was made or is in place in case there is any disruption in the production where the flow to the present mud lake will seep and will that seep in our draining takes place, will that lead to something similar to what happened in Manchester recently when there was a dust nuisance, so I am asking you to address those two concerns. Thanks.

DR. DOUGLAS: Thank you very much for that question Mr. Lewin. Firstly, I believe ladies and gentlemen, in explaining or describing what is involved in the project I tried to do it so that everybody could have an understanding and an appreciation for it, but let me go through it again because I wouldn't want you to go away from this meeting having taken your valuable time. Let me try and answer the question before you come back again. JAMALCO operates what is known as a closed circuit alumina plant, that means everything that goes into the plant is circulated except for the alumina product that is taken down to Rocky Point and shipped to North America, okay and the red mud residue itself that is stored, and I call it red mud because this is the name that is commonly known to most Jamaicans and most people throughout the world but technically it's properly known as bauxite residue. Why is it called residue, simply because after you have taken out all of the alumina values out of the bauxite and a whole lot of names go for that which is even more complicated, all of the alumina things that can be extracted, you have a residue that is left that will not be extracted into alumina product, and that is the iron and so on, the ..., the silica that Mr. Wilson spoke about earlier plus things that are added to the process like lime, that is why they call it bauxite residue, that now must be stored. The common name and this is something that cause all kinds of complications over the world, red mud is what you are accustomed to, so that our bauxite is normally red in colour although sometimes it can be yellow, sometimes it can be brown, and some alumina plants throughout the world, sometimes it's even green and sometimes it's black or dark brown depending on which process you apply, so that is what you store, your residue and what we are saying is that the liquid that is associated

with this residue, what you are doing is to make the mud sediment settle down as rapidly as possible and consolidate and compact as tightly as possible and therefore when it does that it squeezes out the liquor that is associated with it and therefore, when the rain falls, storm water, it picks up what is squeezed out, the solutes, or the substances like the alumina and caustic soda associated with it and then you take off that substance, the liquid and you store it in the residue, the rain water storage area, run-off storage area. You understand? Is that clearer? And instead of just simply storing it you use it back by pumping it into the plant and when you do that it means that you have to use less fresh water, you can pump less well water and so on. Is that any clearer? If I had a blackboard I could use it but the whole Bayer process is a cyclic one, it is completely cyclic and everything is going around in a circle all the time except you have bauxite being put in at one end and you have alumina taken up at one end and you have red mud coming off and that is stored at another end. So that is what it means, it's just the material is stored as red mud or as residue, whichever name, it's the same thing we are talking about and then the liquid part of it, the liquid part of it is what is taken back into the plant and re-used. I hope that makes it clearer otherwise, really and truly, if we were to talk the scientific language, I would say that the whole residue system is a heterogeneous slurry, it is a two phased system that consist of this and that, so I can't break it down any further than that, if you want me to break it down further, you could get a chalkboard or flip board and I will do, and I would be happy to do that so you can understand but the issue is, and this is why we stressed earlier on, it is a zero discharge plant, they don't want to discharge anything to the environment, they want to re-use their thing, nothing goes out, only the mud you are storing in these empoundment areas or the residue, the water or liquid associated with it is collected and stored in this special facility that we are proposing to build and all of that is re-cycled and used in the plant and to the extent you use that, you don't need no new water or fresh water, you need less and less water, this is what is known as resource conservation and by doing that you get a better economy, it cost you less and it makes your material and products more competitive. If you want me to expand I would be very happy to come back any time and sit down with you or anybody else who wishes to have it clarified because you should know and understand, we are not concealing anything, but if you know the thing is zero discharge you would appreciate it better.

CHAIRMAN: There was a second question?

MR. LEWIN: In case of disruption in the operation.

DR. DOUGLAS: What kind of disruption because you could have all kinds of disruptions. Okay, I remember now, you are speaking about the situation that existed up by Batterssea Lake in Manchester near to Kirkvine plant, that is where Kirkvine operated. That was on the television several months ago. Let me say it was problematic only because the mud was not being kept wet, all you need to do is to keep the surface of the mud moist and the moment you try to pump back the well water back into the lake you have the problem, but JAMALCO has gone further than that, JAMALCO has a forty year residue storage plan that is shared with the Government of Jamaica, even this EIS, the Government said they want to see their twenty-five plan and what we are doing is working with JAMALCO beyond just wetting the surface of the pond, is to do an entire rehabilitation, re-vegetation study in which we look for the synergy of the raw material, different things, some more acidic, some more like fertilizer and we grow all kinds of plants and all kinds of things, so years to come, fifty or a hundred years, they will be in a position because they now have the knowledge and technology to cover over back those red mud storage plants, and that takes place even naturally right now, not in this system but with some old red mud storage areas in Jamaica in which you have plants growing there after a certain number of years naturally by itself. That answers the question I think.

MR. KING: Good night ladies and gentlemen. Anthony King from the Top Hill Citizens Association. My question to JAMALCO is, when will JAMALCO consider to repair the mud lake that is leaking for several years and whatsoever is leaking from the mud pond right now is coming straight down into the water. There is no one in JAMALCO that work in certain office that drink the water from the pond at JAMALCO, not one of them and I am saying it for years and I say it to bigger people and I say it to little people, when will someone consider us to repair the mud lake that is draining. I work on the mud lake sometimes and many of the times I also point it out to the big people at JAMALCO, see it here and when the truck come there to collect the water, the water that leak off the truck take the same residue that is coming from the mud pond and put it right in the drain and carry it right down to the river; the liquid is not going to the river, the liquid store right where the Hayes water irrigation is that supply the whole community around Hayes, and we are asking JAMALCO when they consider to fix it. And the next thing is last week I asked the question about this work and someone said to me there was no budget so I want to know when was this budget put in place, when was this budget put in place because up to last week I asked this question and someone from JAMALCO say there was no budget.

DR. DOUGLAS: All right Mr. King, let me start with the matter of the budget. I think you were listening carefully and you heard that I said at some point that the

project will take place, I think Mr. Hamilton asked the question, when the project will start, and I said there are several things you must have approvals for, among them the permit from NEPA and approval from other government agencies and you have to get approval from Alcoa and the Government of Jamaica to make their contribution towards the project, so if you heard it wasn't done, then it's still not completely approved. You don't have a permit to do the project, that is part of why we are here and therefore you have to go through this process and having done so you have to get approval for the funds to spend on the project, that is one of them.

MR. KING: Twenty-five years' time?

DR. DOUGLAS: I can't say how long that part will take but this is what I know and must share with you, approvals must be completed before the project can be implemented, okay, and this is not just the environmental side but also matters to do with funds. The next question you talked about has to do with leakage. The company has one of the most comprehensive environmental water quality monitoring regimes that you can find not only in Jamaica but the entire world, one of the best systems and the data has got to be reported to the Water Resources Authority, NEPA, Ministry of Health on a monthly basis, the data is public record, it's not a secret, you have the right to demand that information as a citizen under any procedure including the Access to Information Act and you will see that they are all compliant with it. I don't know about the whole detail you mentioned in terms of which water who don't drink or drink, but I think and I know JAMALCO workers all drink the same water that is potable water for the area.

FLOOR: No, no.

DR. DOUGLAS: I say to you ladies and gentlemen that is what I know, you might know otherwise, but I am saying to you what I know and I cannot see why the company would misinform me about something like that.

CHAIRMAN: Okay, thank you Dr. Douglas. Mrs. Robinson.

MRS. ROBINSON: Okay, this is just assisting Mr. Barnswell, I don't think he knew. The clinic down in Raymond, for maybe three weeks they stopped doing medical down there, I went down there and asked and was told that they stopped doing medical, it's the week in August, I know I went down there and spoke to one of the ladies that works in there, it was three weeks and when I went there I had to take my daughter there and it was in September here that I got through with her, so Mr. Barnswell doesn't know that they

stopped doing medical for two or three weeks. I went there, they said the doctor isn't available. The second thing to the Doctor there, you are the one that is speaking so I am going to direct this to you because I have another question. A young lady here said there was an instance where she was told that there was a job at JAMALCO opening, she did medical, she didn't have the money, she was given the medical form, went to the doctor and paid \$7000 and when she went and did the medical and sent in the medical she did not get the job and she's not the only one that that has happened to. I am not going to give JAMALCO all the fault and people are not going to like me for this and I said it before and I will say it again, JAMALCO is not the beginning all and the end all. JAMALCO is good where it's good and I give credit to Caesar where it suppose to go to Caesar; JAMALCO has done some things, a lot of things for the community although there is a lot of politics in it, JAMALCO has done things for the Hayes community and surrounding, we can't just say dem nuh do nothing, dem do because I am the President of my youth club and Mr. Lambert, I don't know you so please raise your hand, thank you very much Mr. Lambert. Mr. Lambert assisted my youth club to get gold for Festival and nobody never recognise my youth club until it come into play and everybody know me and nobody would say okay this lady has a youth club with the young people and she's trying to get them to do something constructive so JAMALCO is good, they do a lot of stuff. Miss Cousins, she employ a lot of people from Hayes, so whey oonu a tell me say, and you have a lot of contractors that give jobs to us. Look here, it's not going to be perfect, we don't live in a utopian society, we don't live in the perfect society but what we are asking JAMALCO to do is to ensure that this that is coming up, make sure and if you can give me one work mi we take it, but the thing is just ensure that the people living in Hayes that you can hire, make sure we are on top of the list and not put to the side or the back. JAMALCO does a lot for Hayes but because of politics it get sidelined sometimes. I am not going to lie, I don't care if nobody like me for that, I don't care, but the thing is we need to wake up, stop think that JAMALCO is God. Sometimes yuh pickney do seven/eight subjects, send them somewhere else go work, dem don't have to go JAMALCO go work, dem nah dead, and those who stay here and can work at JAMALCO send them go. That is all I am saying.

DR. DOUGLAS: Thank you for your comments, they are all noted and they are on the record.

CHAIRMAN: The issue of the medical, let me say that the Government has requested that far more children do the medical than was previously the case and I have found that adequate provisions, in my opinion, have not been put in place by the Ministry of Health and so what we have found is that

currently many of our students have not yet done their medical. So that JAMALCO could not do enough to all for all of the medicals to be done, because the medical, the form the Government previously said to us, send the child to a doctor and the doctor would have his or her own document; currently we have a far more rigorous document and so it takes much more time and so the facilities from the Health Ministry simply were not in place to cater to the need, so what we are hearing is about medical but it's quite different this year than any other year previously and so irrespective of what was put in place by JAMALCO, JAMALCO would have to triple their effort to be able to cater to the current demand that is in place.

DR. DOUGLAS: Thank you very much Chairman, Mr. Nicely. I believe the comments that have been made have been well documented, they are on record and they were previously answered. You have answered them very very well, I have no further comments to make, okay.

CHAIRMAN: Okay, so I think we are at the very end, and I would like to thank the JAMALCO representatives who are here, I would like to thank Dr. Douglas and his colleagues representing Conrad Douglas and Associates. I would like to thank the Environmental and Planning Agency and to thank also all the persons from the community who came out and participated in this activity. I have learnt a lot and I suppose you have learnt a lot as well and as Dr. Douglas continues to say, all your concerns, comments, questions are fully documented and will be treated with and so this meeting is officially adjourned. We wish you God's richest blessings as you move to your respective homes. God

bless you.

ADJOURNMENT 8:20 p.m.

APPENDIX

APPENDIX 1

PUBLIC MEETING ADVERTISEMENT

D10

THE SUNDAY GLEANER, AUGUST 15, 2010 | FEATURE



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**THE CONSTRUCTION OF
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VENUE: HAYES PRIMARY AND JUNIOR HIGH SCHOOL
HAYES, CLARENDON

DATE: TUESDAY, SEPTEMBER 7, 2010

TIME: 6:00P.M.

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THE GLEANER, MONDAY, SEPTEMBER 6, 2010 | NEWS

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INTERNATIONAL

THE DAILY OBSERVER | 15
Thursday, August 19, 2010


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**Environmental
Impact Statement**
for
**THE CONSTRUCTION OF
THE RUN-OFF WATER STORAGE (ROWS) 1-5**

VENUE: Hayes Primary and Junior High School
Hayes, Clarendon



DATE: Tuesday, September 7, 2010

TIME: 6:00 pm

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NEWS

THE DAILY OBSERVER
Thursday, September 2, 2010



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for
**THE CONSTRUCTION OF
THE RUN-OFF WATER STORAGE (ROWS) 1-5**

VENUE: Hayes Primary and Junior High School
Hayes, Clarendon


DATE: Tuesday, September 7, 2010

TIME: 6:00 pm

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INTERNATIONAL

THE DAILY OBSERVER | 19
Monday, September 6, 2010



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on the
**Environmental
Impact Statement**
for
**THE CONSTRUCTION OF
THE RUN-OFF WATER STORAGE (ROWS) 1-5**

VENUE: Hayes Primary and Junior High School
Hayes, Clarendon


DATE: Tuesday, September 7, 2010

TIME: 6:00 pm

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APPENDIX 2

AGENDA

AGENDA



**MANDATORY PUBLIC MEETING ON THE PROPOSED
CONSTRUCTION OF THE RUN-OFF WATER STORAGE (ROWS) 1-5
FACILITY BY JAMALCO**

Chairperson: Mr. Mark Nicely

1. Call to Order

2. Prayers

Mrs. Ruthlyn Francis

3. Welcome & Introductions

**4. Presentation of the findings
of the EIS**

Dr. Conrad Douglas

5. Questions & Answers

6. Adjournment

APPENDIX 3

FACT SHEET



FACT SHEET

PROJECT:	Construction of Jamalco Run-Off Water Storage (ROWS) 1-5
PROPONENT:	Jamaica Alumina Company (Jamalco)
EIS CONSULTANT:	Conrad Douglas & Associates Limited

WHO?

- Jamalco proposes to construct Run-Off Water Storage (ROWS) 1-5.

WHAT?

- The ROWS 1-5 will be constructed on approximately 28 hectares of land, inclusive of land area allocated for access roads, adjacent to RDAs 3 and 4.
- ROWS 1-5 will be used to store and control the storm water runoff from the residue disposal areas (RDAs), and recycle the collected water to the alumina refinery for use in the process
- The storage volume of ROWS 1-5 will be approximately 5.2 million cubic metres.

WHERE?

- The proposed ROWS 1-5 will be located to the south of RDAs 3 and 4, which are west of the Jamalco refinery.

WHEN?

- The projects will start-up immediately upon receipt of a Permit to do so from NEPA.

WHY?

- ROWS 1-5 will minimize the holding of storm water and allows for better consolidation of the residue in RDAs thus enabling the RDAs to store greater volumes of residue.
- It complements Jamalco's policy of zero discharge of storm water and allows greater reuse of water between the lake and the refinery. It also reduces the demand for fresh make up water.
- Offers a more environmentally safe operation of the RDAs ensuring on-going compliance with the Legislation and Regulations of the Government of Jamaica.

HOW?

- Innovative and state of the art technologies will be incorporated in its design for full environmental compliance.
- The project will be constructed and operated in compliance with the guidelines and conditions of the regulatory framework.
- No natural resources are at risk
- There are no severe environmental hazards
- ROWS 1-5 will support the RDAs in operating on a zero discharge basis.
- Project will be monitored during construction
- The ROWS 1-5 will have a dual liner system with: (1) an impermeable geo-membrane being placed on top of (2) a compacted clay liner/sealant to prevent groundwater contamination.
- Adequate drains will be put in place.
- Landscaped areas will mitigate the impact of any run-off

APPENDIX 4

THE PUBLIC MEETING PRESENTATION

Jamalco's Run-off Water Storage (ROWS) 1-5 Hayes, Clarendon

PUBLIC MEETING
PRESENTATION OF THE FINDINGS OF
THE ENVIRONMENTAL IMPACT
STATEMENT

Jamalco

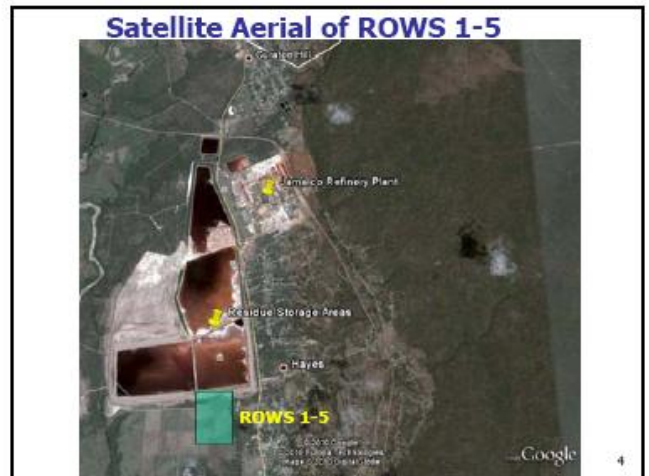
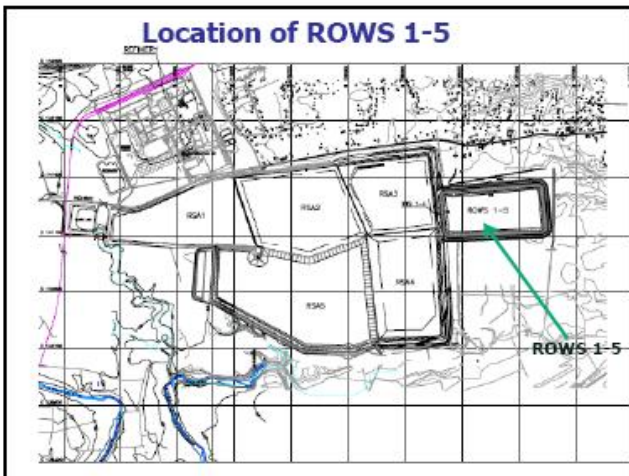
SEPTEMBER 7, 2010

Conrad Douglas & Associates Ltd.
1

Introduction

- Jamalco proposes to construct a Run-Off Water Storage (ROWS) 1-5 Area.
- ROWS 1-5 will be used to store and control the storm water runoff from the residue disposal areas (RDAs), and recycle the collected water to the alumina refinery for reuse in the process

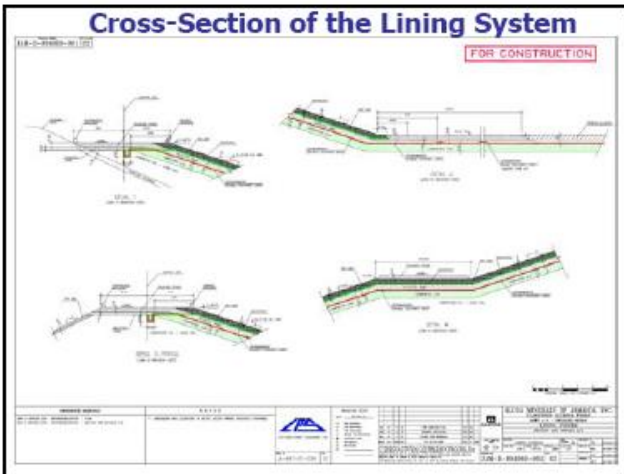
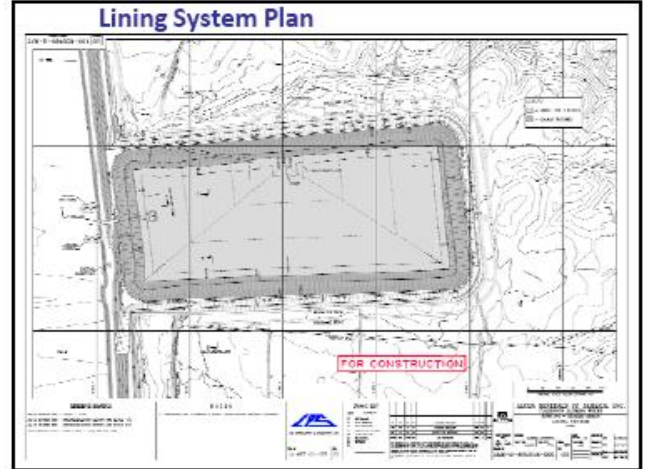
2



Project Brief

- The proposed ROWS 1-5 for RDAs 1 to 4 and DRDA 5 is to be located to the south of RDAs 3 and 4.
- ROWS 1-5 will be constructed on approximately 28 hectares of land, inclusive of land area allocated for access road, adjacent to RDAs 3 and 4.
- The proposed storage volumes of ROWS 1-5 is approximately 5.2 million cubic metres.
- The ROWS 1-5 will utilize a base layer, incorporating a combined compacted clay and HDPE geomembrane seal, within excavations and embankments.

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Project Brief cont.

- The proposed construction of the ROWS 1-5 will not encroach on the 1:100 year flood level as predicted by the most recent flood studies report carried out by Water Resources Authority (2006).
- Buffer Zones
 - The proposed ROWS 1-5 will not encroach on the existing screening trees
 - Minimum of about 220 yards (200m) from these existing developments.
- The design has taken into account possible flooding of the Rio Minho and its flood plain.

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Alternative Analysis

- **Take no action**
 - unacceptable given the identified risk of storm water overflow during a large storm event.
- **Treat and discharge to the Rio Minho.**
 - Jamalco aims to remain a zero discharge facility.
- **Site lake elsewhere**
 - The alternative of siting the lake elsewhere did not meet the required criteria of operating under all conditions.

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Uses of ROWS 1-5

- Minimise the holding of storm water and allows for better consolidation of the residue in RDAs thus enabling the RDAs to store greater volumes of residue.
- Complements Jamalco's policy of zero discharge of storm water and allows greater reuse of water between the lake and the refinery. It also reduces the demand for fresh make up water.
- Offers a more environmentally safe operation of the RDAs ensuring on-going compliance with the Legislation and Regulations of the Government of Jamaica.

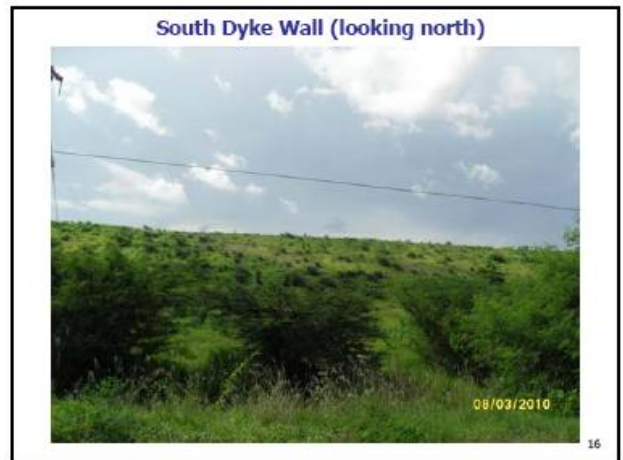
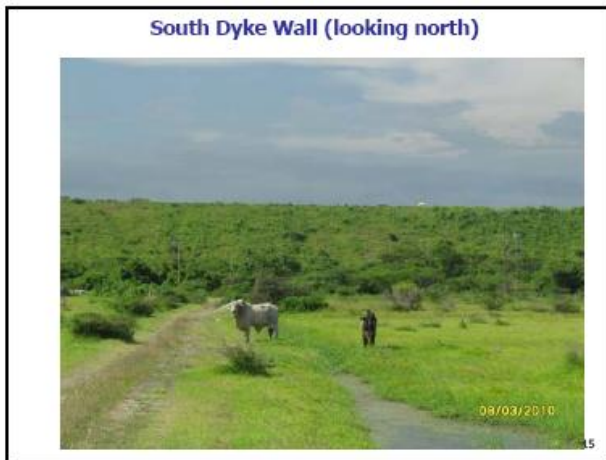
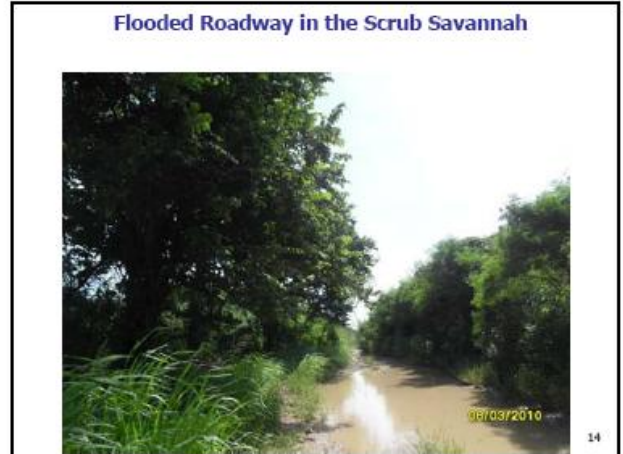
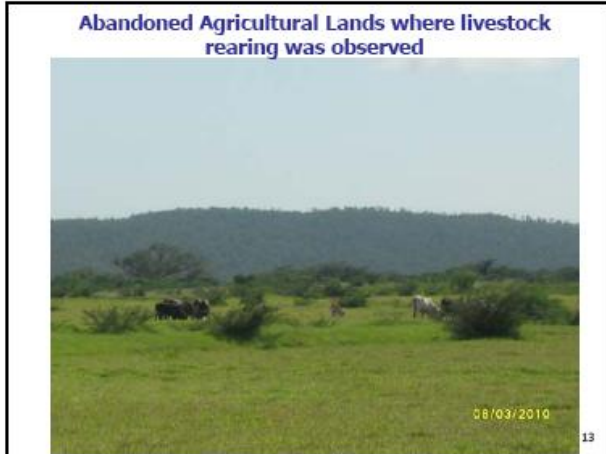
10

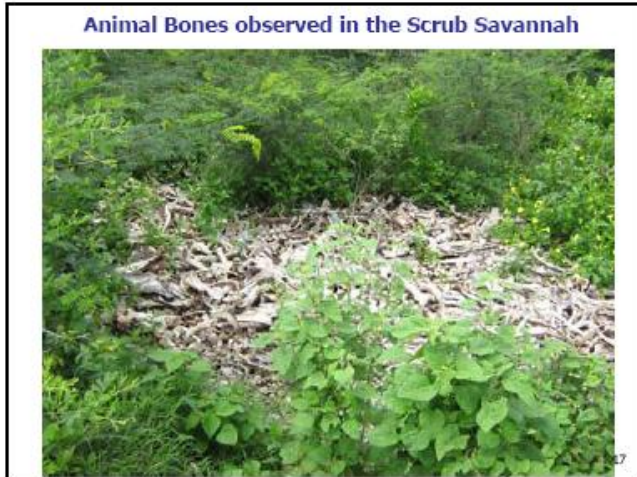
Receiving Environment

- The environmental setting is one of a xerophytic (dry) area with maritime weather conditions and vegetation and fauna similarly suited and adapted for those conditions
- Terrain predominantly flat scrub thorn/grassland.
- There are no threatened, rare or endangered species of flora or fauna at the proposed project site.
- The area proposed for construction of ROWS 1-5 is abandoned agricultural land for which change of use has been obtained.

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Flora & Fauna

- The dominant or most common plant species in the project site area were Wild poponax (*Acacia tortosa*) and Seymour grass (*Andropogon pertusus*).
- Due to the current agricultural use of the site, fauna inhabiting the proposed site is limited.
- Only one migrant of a total of 15 bird species was identified.
- Insects were fairly well represented: most noticeable were butterflies and bees.

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Flora & Fauna cont.

- These insects main ecological functions are as pollinators.
- Reptiles and amphibians were not noted during surveys. However, literature reviews indicate the likely occurrence of certain species in the study area.

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Species List

Family	Scientific Name	Common Name	Status
Acanthaceae	<i>Ruellia tuberosa</i>		Frequent
Agavaceae	<i>Agave</i> sp.		Often
Amaranthaceae	<i>Amaranthus spinosus</i>	Wild amaranth	Often
Amaranthaceae	<i>Achyrocline satureioides</i>	Devil's Horseweed	Often
Amaranthaceae	<i>Gonolobus decumbens</i>		Rare
Apocynaceae	<i>Urucitrus ides</i>	Nightshade	Often
Asclepiadaceae	<i>Celastrus procere</i>	Dumb cotton	Often
Asteraceae	<i>Achillea millefolium</i>	Spanish needle	Often
Asteraceae	<i>Erigeron acrochloa</i>	Chinese sheering bush	Often
Bignoniaceae	<i>Crotonia cuneata</i>	Cashew	Often

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Species List cont.

Family	Scientific Name	Common Name	Status
Bignoniaceae	<i>Tecoma stans</i>		Often
Bromeliaceae	<i>Tillandsia recurvata</i>	Old Man's Beard	Often
Cactaceae	<i>Sarcocaulis hyssopifolia</i>		Frequent
Commelinaceae	<i>Commelina diffusa</i>	Water grass	Frequent
Convolvulaceae	<i>Ipomoea indica</i>	Morning glory	Frequent
Cyperaceae	<i>Cyperus odoratus</i>		Frequent
Cyperaceae	<i>Eleocharis</i> sp.		Often
Cyperaceae	<i>Cyperus jamaicensis</i>		Often
Cyperaceae	<i>Cyperus odoratus</i>		Often
Euphorbiaceae	<i>Euphorbia hirta</i>		Often
Euphorbiaceae	<i>Jatropha gossypifolia</i>	Belly-ache-bush	Frequent
Fabaceae	<i>Acacia tortuosa</i>	Wild Poponox	Dominant
Fabaceae	<i>Acacia farnesiana</i>		Frequent

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Species List cont.

Family	Scientific Name	Common Name	Status
Fabaceae	<i>Mimosa pudica</i>	Shameweed	Frequent
Fabaceae	<i>Leucaena leucocephala</i>	Lead tree	Dominant
Fabaceae	<i>Haematoxylum campechianum</i>	Logwood	Frequent
Fabaceae	<i>Samanea saman</i>	Guango	Frequent
Fabaceae	<i>Sida eburnea</i> *	West Indian ebony	Frequent
Fabaceae	<i>Pithecellobium dulce</i>	Dogwood	Rare
Fabaceae	<i>Macroptilium atropurpureum</i>		Often
Lamiaceae	<i>Hyssopus officinalis</i>		Often
Malvaceae	<i>Sida acuta</i>	Broomweed	Frequent
Malvaceae	<i>Urena lobata</i>		Rare

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Species List cont.

Family	Scientific Name	Common Name	Status
Malvaceae	<i>Abutilon</i> sp.	Chinese lantern	Rare
Nyctaginaceae	<i>Pilea aculeata</i>	Cockspur	Often
Plantaginaceae	<i>Plantago acedens</i>		Often
Poaceae	<i>Andropogon furcatus</i>		Often
Poaceae	<i>Cenchrus ciliaris</i>		Often
Poaceae	<i>Panicum maximum</i>	grass	Frequent
Polygonaceae	<i>Arisaema sp.</i>		Often
Sterculiaceae	<i>Cassia siamea</i>	Beard cedar	Rare
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Verbena	Often

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Benefits of the Project

- Investment in the order of about US\$80 million for local and international services.
- Direct and Indirect Employment Opportunities
 - 185-200 jobs (at peak) in the 18-20 months construction phase. This includes:
 - Skilled Labour such as Operators, Truck Drivers, Electrician, among others.
 - Unskilled labour.
- Improvement in the efficiency of Jamalco's Operation.
- Greater environmental benefits

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Potential Negative Impacts

- Changes in Natural Drainage
- Sedimentation
- Air Quality (During construction)
- Noise & Vibration (During construction)
- Loss of Biodiversity (loss of natural features such as habitats, niches and species)
- Ground (soil) Conditions
- Aesthetics
- Pollution of Surface and Groundwater Resources
- Uncontrolled Discharge of Storm water
- Change in Land-Use

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Impact Mitigation


- Removal of Vegetation, Loss of Habitat, Aesthetics
 - To be mitigated through landscaping of the surrounding areas
- Fugitive Dust, Air Pollution
 - During construction a dust suppression system will be put in place to reduce wind-borne particles
- Erosion, Sedimentation, Pollution of Groundwater
 - The storm water lakes will have a dual liner system with: (1) an impermeable geo-membrane being placed on top of (2) a compacted clay liner/sealant. There have been no groundwater pollution from the disposal areas since the inception of Jamalco's Storm Lakes operation
 - Landscaped areas will minimize any run-off

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Impact Mitigation cont.

- Solid Waste Handling and Disposal
 - To be handled in accordance with Jamalco's existing handling and disposal regime and GOJ regulations.
- Noise, leaks, exhaust from construction implements, petrol/oil/lubricant storage
 - All equipment to be monitored and maintained through all phases of work
- Storm Water Management
 - Zero discharge facility. Storm water will be recycled and reused in the plant's operation
 - Adequate drains will be put in place to ensure that this does not occur.


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Environmental Monitoring

- A monitoring plan will be developed for approval by NEPA.
- This will be implemented to ensure that the project complies with sound environmental practices, NEPA's standards and Jamaico's environmental values.
- Monitoring will be done for the following phases:
 - Pre-construction Phase
 - Preparation of land and surrounding environment prior to construction
 - Construction Phase
 - Erection of new physical structures and modification to terrain
 - Operational Phase
 - Operations in compliance with guidelines and terms established in the EIS and conditions set by NEPA

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QUESTIONS & ANSWERS

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APPENDIX 5

ATTENDANCE REGISTER

PUBLIC MEETING
ON THE ENVIRONMENTAL IMPACT STATEMENT FOR THE CONSTRUCTION
OF THE RUN-OFF WATER STORAGE (ROWS) 1-5 BY JAMALCO SEP 7, 201

#	NAME	Community/Affiliation	Number
	Phillip Ellis	Guardsmen L-7-D	372-0629
	O'Neil Lewin	Corn Piece/Vere Tech	986-0570
	Delorie Miller	New Town Phase I	369-5640
	Caton Spencer	Hayes	426-1026
	C. Whyte	Corn Piece	448-0342
	M. Freeman	Hayes Primary & High	386-4936
	Kenford Blair	Hayes Supervisor	872-4982
	Kevin WRIGHT	TOP HILL HAYES	430-7534
	Errol Thompson		484-9344
N	Cassid Walker	JAMALCO	296-0578
	Errol Morris	NEPA	376-9896
	Ruthlyn Francis	Hayes	986-0976
b	Estane Smith	Jamalco	
	Condel Meroof	Top Hill	370-8544
	Maryn Lewis	Cornpiece	885-1679
	Marlene Booked	Top Hill	412-9447
	Migel Morris	Corn Piece	897-1380
	Colt Rabrice	New Town Hayes	881-0562
	Roderick Cross	Halse Hill	432-9139
	Amory Williams	Raymonds	851-6201
	Gladys Smikle	Raymonds	426-5274
	Cassandra Allen	Landless	292-3345
	Hankay Cayman	TOP HILL	289-2239
	Lone Johnson	Haye 10	421-6312
	Clinton Riley	Hayes New Town	431-1898
	Doreen Riley	Hayes New Town	406-1276
J	Leo Lambert	Jamalco	383-3725
	L.M. DONALD	HAYES PO - HAYES DIST	682-9127
	Verdawn Golding	Hayes Dist	352-3953
	R. McGeachy	Raymonds Dist	389-7672
	Scott Bannister	Parish Council/for	351-8300
	Paul Wright	Raymonds	407-6906
	R. Ford	caucillox	986-0826

#	Name	Community/Affiliation	Number
	B. Bonnick	Savannah	448 6691
W	Duanne Michael	Hayes Corn Piece	888 3088
W	Leig digg		929 416
	Rumela White	Tamalco	
	Norma Billette	Hayes ^{corn piece}	872-9925
	H. Dufford	Corn Piece	4773 080
	J. Cousin	Corn Piece Self	465-8158
	S. Muller	" "	852-1209
	Petale Polong	many must sche	568-6083
	Orlacia Lewis	New Town community	383-5727
	Carol Reid	Corn Piece	860 3186
	Chau Riley	Hayes P.O.	394-566
	A. H. H.	Hayes P.O.	890 822
		Office	
	J. Lenthe	Hayes Refining Council	413-3918
	B. BEALE	SAVANNAH DIST	986-6660
	S. Stephens	Corn Piece Settlement	8939620
	M. Wellington	Corn Piece	3995974
	P. Frazier	Corn Piece	806 7921
	S. Duncan	new town ph I	420-5180
	Lorna McGowan	" "	877-3291
	Terrence	Corn Piece Sett.	8855068
	J. O'Connell	Corn Piece	474-1921
	C. O'neally	Savannah	394-5746
	B. Bennett	Savannah	481-7843
	Y. Stewart	Savannah	988 828
	Markus Richards	New Village	878-9980
	Juliet Newen	Corn Piece	375-8906
	D. W. W.	Corn Piece	398 4764
	Stanley Graham	Corn Piece	
	Nia Dawn Peters	Corn Piece District	891-2083
	Shanee Peters	Corn Piece	506-4861
	Dwayne Buckley	Corn Piece	422508

#	NAME	Community/Affiliation	Number
	Natasha Turner	Savannah District	880-9814
	Janice Nugent	Savannah District	446-2750
	Carlington McLean	Savannah District	470-3189
	SUNIOR	✓	8589823
	Raymond Billings	Hayes District	356-0233
	WAXINE ANDERSON	✓	2845310
	Michelle McLean	✓	429-5235
	St. Albino	Hayes Mt. Rd Hayes P.O	294-7851
	Donald Williams	New Town Phase 2	416 5632
	St. Lewis	SAVANNAH	843-7819
6	Morris Hinds	CORN PIECE SETT	476-2560
45	Paul Grant	CORN PIECE SETT	488-7395
2	Anthony Thomas	TOP HILL DISTRICT	840 5077
	B. Anderson	Hayes Top Hill	355 6529
	TR. JAYLA	NEW TOWN	3090966
	Aldora Graham	TOP HILL	852-5708
1	Shemette Cowans	New Town	589-5738
	Pierre Fremantle	Hayes School Lane	855-3468
	Wade Edwards	Hayes School Lane	867-4604
	Deine Edwards	Hayes School Lane	854-2714
	FRANZ BOOTH	HAYES (DIXIE)	354-3830
	Nordine France	Land Lease Dist	745-5751 ³⁵⁶ 5879
2010	Carl Brown	Savannah	8622935
	Collin Powell	Hayes Baptist Lane	877-27
	Jemel Brown	Bepton St Hayes	3614407 ⁵
	Melinda Bennett	Savannah District	429-0296
	Suzette Blough	CORN PIECE SETTLEMENT	877 4383
	PATRICK GARICK	Savannah Dist.	3686671
	Charmaine Watt	CORN PIECE DIST	859-2429
	Charles Watt	CORN PIECE DIST	574-0867
	Koten Angel	CORN PIECE DIST	853-7749
	Jalim m. f. f. f.	Hayes Dist	471-5074
	Staford Henry	Hayes Dist	611 7804
	Knockier Dyer	Hayes Po	423 9457

#	Name	Community/Affiliation	Number
	Hanife Holmes	Hayes P.O	441-33531
	Eeraldine galle	Savannah	421 5512
	Quinta Fisher	Hayes School Lane	295-0499
	Deran Janett	Raymonds po	873-4176
	Mimtae Forrest	Corn Piece	860 3186
	Errol Bentley	Savannah	384-8720
	Kentor Buddah	Raymonds Po	8877-572
	Ronald Richardson	Land lease	4147272
	Action wallace	Hayes P.O	436 43611
	Kerrick Jrackett	Hayes corn piece	593-7030
	Anetha Cook	Hayes PO Savannah	
	Carol Richards	Hayes po	439-0910
	Kamar Rowe	Hayes Po	423-9830
	Kamesha Francis	School lane	597-4302
	Dwight west	Hill hop	4079722
	John	Somalia	N/A
	Ronald	Jacey	N/A
✓	J Thomas	Savannah	573-9406
-	Noylette andersn	Savannah	843-4632
	A Kirk	Top Hill	848-0241
✓	MARK WILSON	✓	309-7340
✓	Thomas	✓	894-9471
✓	Ricardo Brown	Water Lane	436-3280
✓	A. King	Hayes	555-7926
0	E Campbell	new Bowers	369-7334
	Devon Goffe		N/A
	Marlon Purge	Hayes P.O.	N/A
	Rhusean Rodney	Top Hill Dist	886-0982
	Byron Campbell	Top Hill Dist	578 2722
	Rohan	Benjamin Conlita	366-9601
	Ratrick Barker	savannah	N/A

PUBLIC MEETING SEPT 7, 2010

ON THE ENVIRONMENTAL IMPACT STATEMENT FOR THE CONSTRUCTION
OF THE RUN-OFF WATER STORAGE (ROWS) 1-5 BY JAMALCO

Name	Community/Affiliation	Contact Info
Wayne Morris	CDFA	929-0023/0025/5824
Conrad Douglas	CDFA	"
DORAN BECKFORD	CDFA	"
Joyce James	CDFA	"
Bobby Newmann	Jamalco Capex	876-986-2361
RAY WILLIAMS	Jamalco CAPEX	876-986-2561
Keron Williams	Raymonds Hayes	482-5267
Rosemond Fonda	Corn PEEPS	482-5268
Gifford St	Corn PEEPS	2982132
RANFRER BLAIR	Sarkannah	876-4982
Laurance D. Day	TRIE FM	4689688
Carl Williams	Hayes Pro	405 2219
Patrick Malcolm	Hayes POALU town	425-9077
Oliver James	Hayes NEW town	560-1431
Helen Cooper	Corn Piece Hayes	379-5145
Richard Hsu	c/o JAMALCO	473 3391
Joseph McCarthy	Jamalco	862-9032
George Morgan	Jamalco	986-2561 ext 4321
Andrea Spina	Jamalco	986-2561 ext 4521
Eric Lancaster	Jamalco	986-2561 ext 4526
Desmond Mitchell	Hayes	876 359 3039
NOEL TSON	JAMALCO	876 292 57 53
Brester Hasley	Raymonds	876 870-3253
Leaton Sutton	Raymonds	441-5528
Sheryl Blake	Corn Piece Dist	862 8632
Nicola Carter	Corn Piece	392-3689
Clinton Wilson	Corn Piece	299 4279
Arturo Remy	Corn Piece	208-6811
Ronald White	Corn Piece	379 3879
SIMANAR WRIGHT	JAMALCO	283-8559
Stephen Brown	Jamalco	986-2561
Jay Gordon	Corn Piece	588 8137
Charmaine Roberts	Corn Piece Settlement	367 8857
Earl Brown	Corn Piece	847 4323
Merril Rodney	Top Hill Dist	859 7980

#	Name	Community/Affiliation	Contact Info
	Marilyn Williams	Hayes School Lane	359-2368
	NOEL McLEAM	RAYMONDS	986-0559
	Roger Williams	110 SAMALCO	986-2561
	Nigel Anderson	New Bowers	886-9288
	Joseph Anderson	New Bowers	379 5132
	Virginia Samuels	New Bowers President	488 5634
	L. Hancock	Hayes	370 9311
	H. Hancock	Raymond	861 6225
	Everol Aneles	NEPA	371 5093
	Justin Hayes	New Bowers	566-7853
	Charmalyn	"	566-8095
	Barronagh	"	
	Mark Bessie	New Bowers	478-4687
	Clarke	New Bowers	804-1586
	Roy Cooper	HAYES	842-4899
	Wilfred Colson	Corn Pice	373, 3057
	Nicola Clarke	Corn Pice	566 3694
	CARNELE Youngs	RAYMONDS	409-5116
	CLIFFORD Russell	Raymonds	474 7377
	D. Donaldson	Hayes	442 3325
	E. Donaldson		
	W. Gardner	Hayes Corn Pice	896-3689
	Ray Russell	Hayes P.O.	481-9777
	Laington Barnaby		
	GLENTON BARNBELL	HAYES TOP HILL	432-9560
	Rushel Webster	Hayes Corn Pice	889-2801
	Kemol Campbell	Corn Pice Sect	974 4850
	MJae Allison	Hayes Phase 2	880 5350
	Nicole Edward	Hayes Phase 2	
	Monique Haughton	Hayes Phase 2	HRU-3274
	Everald Raje	Hayes	430 6816
	X Sutton	PARN PICE	385 2990
	H. Matthee	Phase II	393-66450
		Weston	
	STANLEY ROSSARD	JBI	927 2088 9

APPENDIX 6

PHOTOGRAPHS OF PUBLIC MEETING EVENT



Plate 1: Attendance Register being signed by a Participant of the Public Meeting



Plate 2: Participants getting ready for the Delivery of the Public Meeting Presentation



Plate 3: Participants stand in reverence for prayers by Mrs. Ruthlyn Francis



Plate 4: Participants looks attentively as the presentation was being delivered



Plate 5: Courts Stenographer at work



Plate 6: Participant directing a question to the Presenter